CONSEIL PERMANENT INTERNATIONAL POUR
L'EXPLORATION DE LA MER
CHARLOTTENLUND SLOT – DANEMARK

RAPPORTS
ET
PROCÈS-VERBAUX DES RÉUNIONS

VOLUME CXXXIV

1ÈRE PARTIE
PROCÈS-VERBAUX
(SEPTEMBRE-OCTOBRE – 1952)

2ÈME PARTIE
RAPPORT ADMINISTRATIF
(1951)

EN COMMISSION CHEZ
ANDR. FRED. HØST & FILS
COPENHAGUE

Prix: Kr. 16.00.

Avril 1953.

PRINTED BY BIANCO LUNO
COPENHAGEN

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QUARANTIÈME RÉUNION

COPENHAGUE, SEPTEMBRE—OCTOBRE 1952

BUREAU DU CONSEIL:

Avant le 1er Octobre:

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M. le Dr. K. A. Andersson.

Premier Vice-Président:

M. A. T. A. Dobson.

Vice-Présidents:

M. le Professeur J. le Gall,

M. G. J. Lienesch,

M. le Professeur H. U. Sverdrup.

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Président:

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M. le Professeur J. le Gall.

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M. G. J. Lienesch,

M. le Professeur H. U. Sverdrup,

M. le Dr. Å. Vedel Tåning.

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M. le Dr. A. Bückmann;
Max-Planck Institut für Meeresbiologie,
Anton Dohrn Weg, Wilhelmshaven.
M. le Dr. Julius Claussen;
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Grønlands Fiskeriundersøgelser;
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[1]) Retraitée depuis le 1 Février 1953.

AGENDA

for the fortieth Meeting of the International Council for the Exploration of the Sea.

Copenhagen, 29th September—7th October, 1952.

A. Opening Meeting of Delegates, Experts and Guests.

First Part:

Assembly at the Christiansborg Slot, where the Danish Government on the occasion of the 50th anniversary of the Council's foundation have invited Delegates, Experts and Guests to attend an inaugural ceremony.

In the absence from Copenhagen of His Majesty The KING OF DENMARK, The KING will be represented by H.R.H. PRINCE AXEL OF DENMARK, accompanied by H.R.H. PRINCESS MARGARETHA.

Address by the Minister of Fisheries, Mr. KNUD RÉE.

Response by the President.

Second Part:

1. Welcome and Opening Address by the President.
2. Report as to present Participation.
3. Progress Report as regards Overfishing Convention.
4. Presentation of Administrative Report.
5. Presentation of estimated Statement of Accounts for 1951–1952.

B. Meeting of Delegates.

6. Opening of the Proceedings by the President.
7. Discussion concerning Election of President and Vice-Presidents.
8. Election of President and Vice-Presidents.

C. Final Meeting of Delegates, Experts and Guests.

9. Opening of the Proceedings by the President.
10. Final Approval of the Accounts for 1950–1951.
11. Adoption of the Administrative Report.
12. Consideration of Reports of Committees submitted by the Consultative Committee.
13. Estimate for the Financial Year 1952–1953.
14. Nomination of Finance Committee Members, and Editors.
15. Time and place for next Council Meeting.
16. Other Business.
17. Conclusion of the Meeting.

1ÈRE PARTIE

PROCÈS-VERBAUX

REPORT

of

THE FORTIETH MEETING OF THE COUNCIL

THE 40th Meeting of the Council, marking the 50 Anniversary of its foundation, was held, by the invitation of the Danish Government, in Denmark.

H.M. the King received the Members of the Bureau in a private audience on the 1st October at the Amalienborg Palace.

During the Jubilee Meeting the Council and their guests were entertained by the Danish Government, the Municipal Council of Gentofte, Vice-Admiral A. H. VEDEL (Commander in Chief, Royal Danish Navy), the Member States' Embassies and Legations at Copenhagen, the Commanding Officers of visiting Research and Patrol Ships, and the Carlsberg Breweries.

The Swedish Government invited the participants in the Meeting to an automobile excursion in Sweden on Sunday, 5th October. Minister and Mrs. HJ. R. NILSSON entertained the visitors at a luncheon at Mölle.

Inaugural Ceremony, Monday, 29th September 1952, at 10 a. m.

The Meeting was preceded by an Inaugural Ceremony in the Danish Parliament at the Christiansborg Castle, to attend which the Danish Government had invited the Council's Delegates, Experts, Observers and Guests, the Member States' Ambassadors and Ministers to Copenhagen, the Presidents of Landstinget (Upper Chamber), and Folketinget (Lower Chamber), and representatives for Danish scientific institutions, central administration etc.

In the absence from Copenhagen of H.M. the King of Denmark, the King was represented by H.R.H. Prince AXEL of Denmark, accompanied by H.R.H. Princess MARGARETHA.

The Government was represented by the Foreign Minister, Mr. OLE BJØRN KRAFT, and the Minister of Fisheries, Mr. KNUD RÉE.

The latter spoke as follows:—

"Your Royal Highnesses,
Your Excellencies, Ladies and Gentlemen!

I have the honour on behalf of the Danish Government to offer a cordial welcome to your Royal Highnesses, the Bureau of the International Council for the Exploration of the Sea, the Members of the Council and the Experts, the Chiefs of foreign missions present and the official representatives of the member countries, and the institutions and authorities who as our guests are represented here to-day for participation in the 50th Annual Meeting of the Council.

We fully appreciate the honour shown to the International Council for the Exploration of the Sea by the presence of Your Royal Highnesses Prince and Princess AXEL. I may perhaps recall how valuable a support it was to the researchers who years ago started the work for international exploration of the sea, that King OSCAR of Sweden was, from the very beginning, extremely interested in the plan and its realization; King OSCAR's son and successor King GUSTAV V also strongly supported the plan.

The celebration in Stockholm of the Council's 25th anniversary was a tribute to that country, Sweden, which in 1899 took the initiative in holding the first of the conferences which led to the establishment of the organization at a meeting in Copenhagen in 1902.

The Danish Government desired that the 50th Annual Meeting be held at Charlottenlund Slot which

may be considered the home of the Council, and we are very grateful for the honour which the Council has shown Denmark by accepting this invitation.

It was Swedish researchers who first put forward the idea of international collaboration in the field of oceanography in order that the riches of the seas should be rationally exploited on a scientific basis envisaging that the foundation for such international work should naturally be the results already achieved through exploration made both by the northern countries and the North Sea states.

Without forgetting the great researchers of other countries, Denmark may perhaps be permitted to rejoice because names such as MARTIN KNUDSEN and C. G. JOH. PETERSEN can be mentioned among those who, together with the leading persons of other nations, formed the first plans for international collaboration—plans which were met with understanding by the different Governments.

In the course of years the field of operation which originally included the North Atlantic, the North Sea and the Baltic was extended, and the tasks increased accordingly. The western and southwest European countries with their particular problems also desired to join in the work.

The international exploration of the sea from northern and western Europe has become the model for corresponding organizations which gradually have taken up similar work in other parts of the world—in the Mediterranean, in North America and in South-East Asia. We are extremely pleased to see representatives of these organizations here today.

Copenhagen was chosen as the seat of the Bureau when the institution was established in 1902 and we feel it an honour that most of the annual meetings have been held in this city. We take this as an international recognition of the part in the collaboration which has been played, and still is being played, by Danish researchers. We hope that the Council has felt that we have been anxious not only to house the Bureau and the annual meetings, but also to create the best framework for the work. I may perhaps call to mind in this connection that the Danish Government in the middle of the thirties placed Charlottenlund Slot at the disposal of the International Council for the Exploration of the Sea; the various branches for the Danish exploration of the sea have also gradually been housed there.

I do not wish to tire you with further survey of the progress made during the past 50 years; this must be a matter for the experts. But I would like to say that the activity of the Council was appreciated and followed with understanding by the Danish Government and Rigsdag right from the beginning.

My personal contact with the international exploration of the sea is of comparatively recent date, but the annual meetings in this country have gradually made the institution a feature in the public eye, and I have through my work in Denmark's greatest fishing town, Esbjerg, often been in touch with Danish research work. It has pleased me always to see the growing understanding shown by the people in the fishing trade of the practical value of the explorations. I have likewise, through my work as Minister, got to know the work at close quarters, and it has fallen to my lot to carry through a rational re-arrangement of the Danish fishery explorations.

It is surely unique that an international organization can look back upon work extending over half a century. The Council is one of the oldest—perhaps the oldest—of international combinations and is fortunately, in spite of its 50 years, still a vigorous body. Even though the international connections were severed during the two world wars, the bonds have again been drawn close. The organization has constantly grown new branches and is still in full bloom.

The fact which in my opinion lends special value to this work is—besides the results already reached—that the 50 years have shown that it has been possible firstly to gather and keep together the leading forces of so many nations on a common object, and secondly to carry on the work over a long period of time, as clever young men have always been coming forward to continue the research as the great old men gradually passed away.

A very essential reason for co-ordinating the hydrographic and biological exploration of the sea was that the development of fisheries, and particularly the advent of the steam trawlers, made it necessary to extend the laws for the protection of the fish stocks. It was realised that only through international exploration was it possible to form the basis of common laws dealing with deep sea fishing and to evolve rational methods for its practice.

And to-day, after 50 years of tireless work, we possess a thorough knowledge of the life history of edible fish and a considerably safer insight in the yield of the stocks than formerly.

Furthermore, and this is equally important, it is generally recognized that a rational fishery law can only be built up on a scientific basis.

The development in fisheries has by no means come to a standstill, indeed, operations have been highly intensified in recent years, new tackle and new fishing methods have come into use, while at the same time increasingly large ocean areas have been exploited. All this must face legislation involving new problems about protective measures in keeping with the increasing intensity of the operations. Of course, legislators must lay these problems before the researchers and claims will constantly be made for new exploitations. This means again that fishery and research are inseparable and will continue together as long as a rational development and not over-exploitation of fisheries is aimed at.

When this view has been common among the Governments it has been due not least to the invaluable contribution of the international exploration of the sea, and on behalf of the Danish Government I express our full recognition thereof and add our warmest congratulations on the achievements reached.

I direct this congratulation to the President of the Council, the highly meritorious Dr. K. A. Andersson.

I hope that the Jubilee Meeting will give the participants further encouragement to continue the work, and that you all will feel at home in our country. I conclude with the best wishes for a continued progress in the important work towards the great aim of the Council: A rational exploitation of the sea on a scientific basis."

The President, Dr. K. A. Andersson, replied in the following terms:—

"Your Royal Highnesses,
Your Excellencies, Ladies and Gentlemen!

As President of the International Council for the Exploration of the Sea I have the honour of expressing the infinite pleasure and pride it gives us to see Your Royal Highnesses present at our Jubilee Meeting today.

We are well aware of Your Royal Highness' great interest in scientific investigations and particularly in those connected with the fishing industry, and we are deeply grateful for this. We recall the keen interest in the activities of the Council of your august father Prince Valdemar whom we had the pleasure of seeing in our midst. This tradition is now carried on by Your Royal Highness, and it is our earnest wish that we may long enjoy the good favour of Your Royal Highness.

It is also most gratifying for us to see at this Meeting today members of the Danish Government: Their Excellencies, the Minister for Foreign Affairs, and the Minister of Fisheries. That you have honoured us in this manner today is an indication of the Danish Government's continued goodwill towards the Council. We are very pleased to see representatives of the Danish Parliament and are also glad that so many representatives of Danish science, of Danish public authorities and of Danish Fishermen's Unions are attending our Jubilee Meeting: we take this as an encouraging invitation to seek further co-operation with the Danish scientists and the Danish authorities.

We are extremely pleased to see here today representatives of foreign embassies and legations.

For the charming way in which you, Minister Rée, have welcomed us to this Meeting in this beautiful Castle and for your good wishes for the continued success of our work for the promotion of fisheries I beg you to accept the sincere and respectful thanks of the Council.

As you have already said, the International Council for the Exploration of the Sea is today celebrating its 50th anniversary.

And as you have also mentioned, the first preliminary conference was held in Stockholm in 1899. After a similar conference in Oslo in 1901 our organization was founded at a meeting in Copenhagen in 1902, just 50 years ago.

I should like to remind you of what our President Henry Maurice said at the 25th anniversary in Stockholm. He said: 'The International Council for the Exploration of the Sea is indeed of Scandinavian origin. It is a plant that was sown in Sweden, that germinated in Norway and that flowered in Denmark.'

I should like to recall the fact that already in the 1890's the ground was to some extent prepared for the foundation of our Council through Scandinavian co-operation on a modest scale, co-operation mainly based on the personal friendship of scientists from Denmark, Norway and Sweden.

From the very beginning the following countries were members of the organization: Belgium, Denmark, Finland, Germany, Great Britain, Holland, Norway, Russia, and Sweden, the investigation area comprising the North Atlantic, the Baltic, the Kattegat, the Skagerak, and the North Sea with the English Channel. But the delegates of the above countries were soon convinced of the urgency of augmenting the sphere embraced by the Council and took the necessary measures. France, Portugal, Spain, Ireland and Iceland gradually joined our organization.

After the First World War Esthonia, Latvia and Poland joined our Council, making valuable contributions to its work. For reasons with which we are all acquainted these countries ceased to be members at the time of the Second World War. Russia left us as early as 1915. Germany, which had not been a member of the Council since the Second World War, has now rejoined.

Our Council at present comprises 13 nations in northern and western Europe, and its investigation area now extends as far south as the Equator.

During the past 50 years our Council has always had its headquarters in Denmark and I should like to say that we have been extremely fortunate in having Denmark as our centre.

This has brought the Council into close and advantageous contact with scientific research in Denmark. Denmark has always been very outstanding in the sphere of marine biology. I need only mention such names as C. G. Joh. Petersen, Johs. Schmidt, Martin Knudsen, A. C. Johansen, and latterly Harald Blegvad and P. Jespersen.

It is obvious that close contact with Denmark's intense scientific activity has immensely benefited the work of our Council. Countless impulses and stimuli have been given to the Council by Danish science and Danish practical research.

In its everyday work the Council has always enjoyed the strong support of the Danish Government. Collaboration between the Danish Government and the Council's Central Office has always been excellent. I should like to recall particularly the invaluable assistance and never-failing understanding accorded to us by the Danish Foreign Office and the Department of Fisheries. And I shall add that it was thanks to the Danish Government's firm belief in the need for the Council to continue and the Danish Government's generosity that the Council was able to survive

the two World Wars. I cannot refrain from mentioning that the Danish Government, despite the great difficulties suffered during the Second World War, nevertheless made a large annual contribution to our organization over and above the regular contribution. For all this on behalf of the Council I beg to convey to Your Royal Highnesses our respectful and grateful thanks. Our sincere thanks are also due to the representatives of the Danish Government here present, to the Danish Parliament, to the Danish scientists and to all the people of Denmark.

Today when we are celebrating the 50th anniversary of the Council I shall briefly remind you of the aims of the Council. At the time of its foundation the task assigned to it was the exploration of the sea in the interests of the fishing industry. As you, Minister RÉE, have pointed out, the object was a rational exploitation of the sea on a scientific basis. At the turn of the century sea fishery in north-western Europe experienced a rapid development, and it was a question whether the stocks of fish, in the North Sea particularly, could stand the increasingly mechanized and therefore increasingly intensified fishing. To answer this question it was essential to study the living conditions of the food fishes in the widest sense. It was essential to learn about their lives from birth to death. It was necessary to investigate the dependence of the fish upon the temperature, salinity and other properties of the water surrounding them. It was necessary to examine the food of the fish and the plankton of the sea upon which the supply of fish ultimately depends. It was necessary to study the currents of the sea and the migrations of the fish that were dependent upon them. The great fluctuations in the fisheries and their causes had to be investigated thoroughly. If the fishing, as often happens, deteriorates in a particular area, only detailed knowledge can tell us whether this is due to overfishing or to nature itself. These comprehensive investigations demanded close co-operation between biologists and hydrographers for satisfactory progress to be made.

The field of scientific investigations was indeed wide, and it was obvious that these explorations, which had to be carried out in extensive sea areas, necessitated co-operation between the countries interested.

But it was not only a question of scientific investigations. Practical fishing investigations were also needed to attain our purpose. And these two kinds of investigations had to be carried on in parallel and hand in hand. The scientific results had to be tested in practice. Thus were furthered both the idealistic aims of science and the practical work on the sea known as fishery. The aim of the Council's work is to indicate the best economic exploitation of the stocks of fish, that is, of the international wealth contained in the sea. The ultimate objective is a so-called optimal catch or a catch which is large, but not so large as to disturb the balance between the production capacity of the sea and the amount of fish taken. This brings us to the problem of overfishing. This complicated question has long been one of the main considerations of the Council. Here the Council has been able to prove that in certain cases overfishing has taken place and has also been able to suggest remedies for the protection of the stocks of fish in the North Sea, in the Skagerak, Kattegat, and Baltic.

The activities of the Council embrace problems of great economic scope. And as fisheries become more intensified, embracing new and vaster sea areas, the more important becomes the task entrusted to our organization. But this task cannot be carried out without international co-operation. It gives me great pleasure to tell you from my own personal experience that this has become closer during the period. The delegates and experts of all the nations have been fully aware of the need for international co-operation and have been equally keen to maintain, extend and intensify it. Through this international spirit the Council also has the possibility of preparing the ground, so to speak, for the international negotiation of conventions for the protection of the stocks of fish.

As we now celebrate the 50th anniversary of this organization I venture to express the hope that also in the future the International Council for the Exploration of the Sea will strive successfully towards its great and important goal and will continue to provide a fine example of good international understanding and international co-operation."

Their Royal Highnesses and the Guests then retired.

The ceremony was broadcasted through the Danish State Radio.

First Sitting: Monday, 29th September 1952, at 11 a.m.

The President, Dr. K. A. ANDERSSON, in the Chair.
Present: Members, Experts, Observers, and Guests (*vide* list, pp. 5–9).

Agenda, Point 1. The President opened the meeting. Telegrams were sent (1) to His Majesty the King of Sweden, expressing the Council's gratitude for the initiative taken by King OSCAR II to the foundation of the Council 50 years ago, and (2) to His Majesty the King of Denmark.

The President recalled the grievous loss sustained by the Council in the death of Dr. P. JESPERSEN, late General Secretary. The audience stood for a moment in silence.

The President then expressed regret that Professor JEAN LE GALL, Mr. J. E. DE WATTEVILLE and Mr. MICHAEL GRAHAM, on account of illness, were unable to attend. A telegram was sent to each of them.

The President welcomed the new Delegates, Ex-

perts and Observers, and regretted that Professor Hans Pettersson and Professor Walfrid Ekman had been unable to be present. Besides the guests listed on pp. 8—9, the leader of the great "Galathea" Expedition, Dr. Anton Fr. Bruun had been invited to attend the scientific meetings. Research and patrol vessels had arrived at the Copenhagen harbour on the occasion of the meeting (see list on p. 9). The French research vessel "Président Théodore Tissier", owing to damage incurred, had had to return to France.

The President stated that the special Jubilee Report was now ready for distribution.

The President announced the appointment as General Secretary of Mr. Villy Dessau.

Agenda, Point 2. The President reported that the German Federal Republic had become a member as from 1st November 1952.

Agenda, Point 3. Mr. Dobson reported briefly on the Overfishing Convention. When Spain had ratified, the Convention would come into force, and the British Government would then call a meeting of the Standing Committee.

Agenda, Points 4 and 5. The General Secretary drew attention to the Administrative Report and the estimated Statement of Accounts for 1951-1952, copies of which had been distributed.

The Meeting adjourned at 11.20 a.m.

Second Sitting, attended by Delegates only, followed immediately.

Agenda, Points 6 and 7. The President said that he was withdrawing from the Council and that the Bureau proposed to the Council:—

1. the setting up of an *ad hoc* committee, consisting of three members, for the purpose of making recommendations for election of President, First Vice-President and 3 Vice-Presidents,
2. the three members to represent following three groups of the participating countries:—
   a) the Scandinavian countries: Denmark, Finland, Iceland, Norway and Sweden.
   b) Belgium, Great Britain, Ireland and the Netherlands,
   c) France, Portugal and Spain,

each group to nominate a Delegate outside the Bureau to serve on the Committee.

Mr. Dinesen suggested postponing the election of the Committee till the following day, so that the Delegates could consider the proposal.

The President supported Mr. Dinesen's proposal, which was then adopted.

The Meeting adjourned at noon.

Third Sitting: Tuesday, 30th September 1952, at 11.20 a. m.

The President, Dr. K. A. Andersson, in the Chair.
Present: Delegates.

Agenda, Point 7. The President declared the meeting opened. Mr. Dinesen proposed an *ad hoc* committee of 5 members: 2 members for the Scandinavian countries, 1 for Great Britain and Ireland, 1 for Belgium, France, and the Netherlands, and 1 for Portugal and Spain. Mr. Dinesen also proposed that the *ad hoc* committee, before recommending candidates, should consult the Delegates. Dr. Went and Mr. Ramalho were in favour of an *ad hoc* committee of 3 members.

The Council adopted the Bureau's proposal of setting up an *ad hoc* committee of 3 members, by 7 votes to 5.

The Meeting decided that the votes of the committee shall be counted in such a manner that one vote shall be reckoned for each committee member. Further, that each committee member should consult with the delegations, whom he represented on the *ad hoc* committee.

The Meeting adjourned at 11.30 a.m.

Fourth Sitting: Wednesday, 1st October 1952, at 11.40 a. m.

The President, Dr. K. A. Andersson, in the Chair.
Present: Delegates.

Agenda, Points 7 and 8. The President opened the proceedings and said that the *ad hoc* committee consisted of Dr. Went, Chairman, Dr. Ramalho and Mr. Olafsson. Dr. Went stated that the majority recommended Mr. Dobson as President, Professor le Gall as First Vice-President, and Mr. Lienesch, Professor Sverdrup and Mr. Friðriksson as Vice-Presidents. The Scandinavian group were in favour of a scientist as President, but were prepared to nominate Mr. Dobson President, provided Professor Sverdrup were made First Vice-President, they also proposed Dr. Å. V. Tåning as the new Vice-President.

Dr. Went understood that Mr. Friðriksson desired to withdraw in favour of Dr. Tåning, whom Dr. Went and Dr. Ramalho were prepared to nominate as Vice-President.

Professor SVERDRUP would much prefer Professor LE GALL to be elected First Vice-President.

Mr. OLAFSSON, after an adjournment of the Meeting, proposed the following resolution:

"The Delegates to the Council agree in principle that the President should be a scientist, but recognize that in special circumstances a highly merited non-scientist may be elected."

Dr. WENT pointed out that the Delegates were appointed by the Member States, and that it was, therefore, unfortunate to record a resolution like the one proposed. Professor SVERDRUP stated that if the situation should arise that all Delegates were non-scientists, the very aim of the Council would be jeopardized, and the Council might as well cease to exist. Dr. WENT agreed with Professor SVERDRUP's views, but suggested that it was the wrong type of resolution to propose; he did not desire the question discussed whether the President should be a scientist or a non-scientist. Dr. RAMALHO considered the resolution against the spirit of the Statutes, Article 7, which made no distinction between scientists and non-scientists. The President said that the Council being a scientific body, it seemed to him that the leader of the Council ought to be a scientist. The resolution said "the President should be a scientist", and he saw nothing against the resolution being put to the Council. Mr. DOBSON suggested that the Scandinavian group should withdraw the resolution and instead propose an amendment of the Statutes. The President could not see that the resolution was contrary to the Statutes which stated that the Council draws up its own rules of procedure. Mr. OLAFSSON did not agree with Dr. WENT and Dr. RAMALHO. The Council is a scientific body. Mr. LIENESCH expressed his agreement with the views put forward by Dr. RAMALHO and Mr. DOBSON.

The Council negatived the proposal by 7 votes to 5.

Dr. WENT moved the election of Mr. DOBSON as President, which was carried unanimously.

Mr. DOBSON thanked the Delegates and expressed his satisfaction that a split vote had been avoided. If he had been elected by a majority he would have stood aside.

At the motion of Mr. LIENESCH, Professor LE GALL was unanimously elected First Vice-President.

Dr. WENT moved the election of Mr. LIENESCH, Professor SVERDRUP and Dr. TÅNING as Vice-Presidents, and this was carried unanimously.

Dr. K. A. ANDERSSON was, on the proposal of Mr. DOBSON, unanimously elected Honorary President.

The Meeting was adjourned at 1.00 p.m.

Fifth Sitting: Tuesday, 7th October 1952, at 11.00 a. m.

The President, Mr. A. T. A. DOBSON, in the Chair.
Present: Members, Experts, Observers, and Guests.

Agenda, Point 9. The President opened the proceedings and asked the General Secretary to read the following telegrams received:

"With thanks for the kind message I am sending my heartiest congratulations on occasion of the Jubilee of the International Council for the Exploration of the Sea. FREDERIK R."

"En remerciant de tout cœur les Membres du Conseil International je vous envoie mes salutations chaleureuses et mes vœux les meilleurs pour le succès de votre travail. GUSTAV ADOLF."

Agenda, Point 10. The Accounts for 1950/51 were approved.

Agenda, Point 11. The Administrative Report for 1951/1952 was adopted.

Agenda, Point 12. The President referred to the Reports and Recommendations of Committees and Sub-Committees which were laid before the Meeting, and which had been endorsed by the Consultative Committee and the Bureau; they were adopted *en bloc*. The Chairman of the Consultative Committee desired to underline the general opinion expressed that the level of scientific papers was sensibly higher than any other year since the war. Mr. LIENESCH who was now the Vice-Chairman of the International Whaling Commission gave a summary of the Commission's fourth meeting, held in London in June 1952. The President reported briefly on the second meeting of the International Commission for the Northwest Atlantic Fisheries, held at St. Andrews, New Brunswick, in July 1952.

Agenda, Point 13. The President presented the revised Estimates for 1952/53. The President desired without creating a precedent to receive no honorarium as President, but would accept an amount of kr. 1,000 as an entertainment allowance. Mr. WIMPENNY as Chairman of the Consultative Committee, also without creating any precedent, did not desire to accept more than kr. 500. Items 2, 3 and 6 had been transferred from I., Incidentals, to VI., Publications. Under III, item 5, kr. 4,800.—, preparation of synoptic charts, had been added (Recommendation 4bi by the Consultative Committee). Travelling expenses, V, had been increased to include the cost of a contemplated meeting at Bergen (Recommendation 3 by the Consultative Committee) and the Hydrographer's visit to Lowestoft (Recommendation 4bii.).

The Pensions under VII include kr. 7,353.— to Miss BRØNNICHE, from the date of her retirement, 31st January 1953 to 31st October 1953. The yearly pension proposed by the Bureau amounts to kr. 9,804.—. The Bureau had decided to make Miss BRØNNICHE a parting gift of kr. 750.—. The Bureau pro-

posed that pensions, voted by the Council according to the Statutes, were to be payable at the net rate recorded.

On the President's recommendation the Estimates, the Bureau's proposal of Miss BRØNNICHE's pension, and the rule for payment of the pensions voted, were accepted.

The President stated that the Bureau proposed to ask Member Governments to increase their contributions by 100 % of pre-war rates, irrespective of Ireland's refusal. Portugal's reply had not been received. This was agreed.

The President, and the Honorary President, then expressed the Council's appreciation of Miss BRØNNICHE's work during 28 years, not least during the many months, during which there had been no General Secretary, after the lamented deaths of Dr. BLEGVAD and Dr. JESPERSEN. The President recalled the words of Vice-President TISSIER who said of President HENRY MAURICE that his name would always be linked with the name of the Council. The same would apply to Miss BRØNNICHE, to whom we offer our heartfelt thanks and wish happiness in her retirement.

The President pointed out that according to a Danish law of 7. March 1952, a convention might be signed with International Organizations conferring upon them certain privileges, i.a., exemption from customs duty on the Council's publications, from taxation on income and assets, and exemption from income tax for the Council's salaried and pensioned officials in respect of their salaries and pensions paid by the Council. The General Secretary had brought this matter before the Bureau and the Bureau considered it right to approach the Danish Government.

If granted, such a Convention might mean a saving of about kr. 18,000.— annually to the Council.

The Bureau proposed the following resolution:—

That the Council authorizes an application to be made, and to be signed if granted, for a Convention with the Danish Government on Privileges to be granted the Council so that the Council may enjoy, among other privileges,

a) Exemption from all direct taxes on their assets, income and other property.
b) Exemption from duties on imports in respect of their publications.
c) Exemption for their salaried and pensioned officials from income taxation in respect of salaries, emoluments and pensions paid to them by the Council.

This was unanimously adopted.

The President went on to say that according to the Statutes no proposal involving changes in the Statutes of Council could be considered without two months' notice unless with the unanimous consent of the Delegates present, and asked the Delegates to consent to substitute in Appendix II, Regulations concerning Administration, Finance, 1, section 2 and 3 for the words "the Assistant Secretary (General)" the words "one of the Danish Delegates". If the Delegates agreed, the passage would read:—

"Any document purporting to be signed on behalf of the Council with reference to the Council's abovementioned invested funds will be accepted by the Bureau as valid if it is signed by the General Secretary and one of the Danish Delegates.

The General Secretary and one of the Danish Delegates are jointly authorized in case of sale or change of Treasury Bonds at free disposal of the International Council for the Exploration of the Sea to give receipts valid in law, and to perform all dispositions under real law".

The object of this was to provide for two signatures to certain documents, when the Assistant Secretary had retired, and was not replaced as such.

This was unanimously adopted.

Agenda, Point 14. The necessary nominations took place.

In addition to the permanent members of the Finance Committee, viz., the President, and the Danish Delegates—at present Dr. VEDEL TÅNING and Mr. DINESEN—the President had nominated Vice-President, Mr. G. J. LIENESCH member of the Committee and Dr. KULLENBERG, Dr. LELOUP and Dr. WENT were elected by Council.

Dr. ROSÉN and Mr. LUMBY were reelected editors for *Bulletin Statistique* and the *Journal du Conseil* respectively. Dr. VEDEL TÅNING agreed to render editorial assistance in respect of *Annales Biologiques* and *Rapports et Procès-Verbaux*. It was decided to invite Dr. GUNNAR THORSON from the University of Copenhagen to act as editor for Plankton Sheets at a fee of kr. 1,000.— p.a. with Mr. F. S. RUSSELL as co-editor.

Agenda, Point 16. The President said, the Bureau would propose that the *ad hoc* committee for election of the Bureau members should be continued, and would in future give Delegates notice hereof prior to the Council Meeting.

Agenda, Point 17. The President expressed the Council's thanks to the Observers and Guests representing institutions with whom the Council cooperates:—

Dr. FINN from FAO, Dr. H. W. GRAHAM and Dr. WALFORD from the United States Fish and Wildlife Service, Dr. MARY SEARS, Woods Hole Oceanographic Institution, Dr. NEEDLER from the Atlantic Biological Station, St. Andrews, Canada, Dr. MUNROE and Dr. HAROLD THOMPSON, both representing the Scientific and Industrial Organization, Division of Fisheries, New South Wales as well as the Indo-Pacific Fisheries Council, Dr. MARTIN from the International Commission for the Northwest Atlantic Fisheries, Dr. DUNBAR, McGill University, Department of Zoology, Montreal, Dr. CARL H. OPPENHEIMER, U.S.A., and Mr. GORDON C. PIKE, Fishery Research Board of Canada.

Drs. GRAHAM, HAROLD THOMPSON, MARTIN and MARY SEARS briefly thanked for having been given the opportunity of attending the Jubilee Meeting of the Council.

The Meeting adopted vote of thanks to The Danish Government, The Foreign Minister and Mrs. KRAFT, The Minister of Fisheries and Mrs. RÉE, The Swedish

Government and Minister and Mrs. NILSSON, Vice-Admiral A. H. VEDEL, The Lord Mayor of Gentofte, and the Managing Director of Carlsberg Breweries for all the generous help and hospitality which had been provided during the Jubilee Meeting, and further to the President, the General Secretary, and the Staff.

The President said:—

"I now come to the conclusion of this meeting, but I still have a pleasant duty to perform which is nevertheless tinged with sadness.

We are parting, after 4 years in the Presidential Chair, with our President, Dr. K. A. ANDERSSON, who has gained the affection and the admiration of all of us. "K.A." has won for himself great distinction not only in his own country but in many other countries, as a scientist, and posterity will award him an honoured place. I recall also that in 1901 he went on an expedition to the Antarctic, from which he returned 1904. He has continued his scientific work right up to the present day, and he earned for himself a secure place in the annals of the Council. I do not pretend to be as competent as some of you to speak of his scientific attainments, but it is of the man that I would wish to add a word.

I have known him only since 1938, but we have been intimate friends ever since he joined the Bureau, especially since he became President four years ago. We have never had a serious clash of views, and he has always shown me a kindness and courtesy which will be one of my most cherished memories.

The Council owe him a great debt and wish to give him a token of their affection and devotion.

On the Council's behalf, I ask you my dear K.A., Président d'Honneur of the International Council for the Exploration of the Sea, to accept this little book in which we have recorded our names and our words of Farewell.

We have also chosen for you this silver cigarette case and these two pieces of Copenhagen Porcelain, in which we hope that Madame ANDERSSON will also see a glimpse of the devotion and affection which we desire to show to both of you."

The Honorary President replied:—

"Now I ask you to be patient with me for a moment. You have nominated me Honorary President. I thank you most cordially for this great honour that you have conferred upon me. Through this I shall continue to have connection with the Council. All ties are not yet cut off and I express my warmest thanks to you.

I beg leave to remind you of the years we have passed together and the thoroughly friendly accord that has prevailed during all those years. I should like very much to regard all Delegates and Experts as my personal friends and when I now leave the Council, I shall in the future find great pleasure in recalling you to my mind.

I should like to compare our Council to a scientific club or association, in which Delegates and Experts are all friendly members who want to concentrate their activities on the main object of the Council's work. Between the members of this association there have been no political nor national boundaries and I hope there never will be.

In this spirit the Council will continue to remain a free scientific body. This freedom is indispensable for scientific research and progress. We do not wish to accept any hampering order from any quarter, we want nothing but the very best collaboration towards the high and important goal of the Council.

In this spirit and in this hope I wish the Council a successful future and I express to all of you my hearty and deepfelt gratitude."

The Meeting terminated at 12.20 p.m.

At the Banquet offered by the Gentofte Municipal Council at Gentofte Town Hall, on the 2. October 1952, the acting Lord Mayor, Councillor A. L. ØSTERBERG spoke as follows:—

"Your Royal Highnesses,
Your Excellencies, Ladies, and Gentlemen!

Instead of our Mayor who is unfortunately ill at present it is my privilege on behalf of Gentofte Municipal Council to offer a cordial welcome to:—

Your Royal Highnesses Prince AXEL and Princess MARGARETHA,

The Members of the Danish Government, Your Excellencies the Foreign Minister and the Minister of Fisheries,

The Members of the International Council for the Exploration of the Sea and other Delegates to the Annual Meeting,

The Chiefs of Foreign Missions and Official Representatives, and

The Representatives of Authorities, Institutions and Fishery Organizations who are present here to-night,

and I offer a no less cordial welcome to the brilliant circle of ladies who lend lustre to this evening by accompanying their husbands.

It is a great pleasure to our Council to see you all here at this little informal party arranged on the occasion of the 50th anniversary of the International Council for the Exploration of the Sea.

Many of our foreign guests may never have heard about this small municipality with the name which is a little difficult to pronounce. You may simply have believed that the International Council has its seat in Copenhagen. Indeed, it has, but what we call greater Copenhagen comprises three municipalities of which Gentofte is the northernmost and the smallest.

A hundred years ago Gentofte Municipality was just a rural district, with extensive fields and woods, with a famous fishing hamlet, and with a few summer-dwellings for brave Copenhageners who preferred the country air, and still 50 years ago the number of inhabitants in this district was only one sixth of the 90,000 living here to-day.

You will understand, ladies and gentlemen, that such an ambitious youngster as Gentofte Municipality must

look with envy on the scientific bodies and glorious congresses housed by older towns. And so you will understand that Gentofte is very proud at having within its boundaries the seat of the International Council for the Exploration of the Sea, which is one of the first international bodies ever created, and which is engaged on such an important work as the rational cultivation of the sea—if I may use such an expression.

This is a matter of interest to all of us, not only because of our fishing hamlet, which hardly causes the Council overfishing difficulties—but because the sea in Denmark is close to the door of all of us and its problems are, to a certain extent, the problems of everybody.

I want to thank you all assembled here—headed by Your Royal Highnesses—because you would pay us a visit to-night, and I want to express our best wishes for the future work of the Council."

The President, Mr. A. T. A. Dobson replied:—

"My Lord Mayor, Your Royal Highnesses, Your Excellencies, Ladies and Gentlemen!

I am very gratified to think that my first duty as the new President is to express our Council's cordial thanks for the charming welcome which we have just heard. We have been privileged to have our Headquarters at Charlottenlund Slot and we realize now when we come to the meetings we shall feel ourselves to be temporary citizens of a no inconsiderable commune. We are greatly indebted to the Lord Mayor for his generous hospitality.

We live in a somewhat troublous age when, as an English writer has said:— 'courtesies grow chill and life's fine loyalities are turned to jest'. It is, therefore, somewhat of an achievement for any Body like this to have reached its 50th anniversary. That being so I hope I may be allowed to spend a moment in reminding you of our Founders and Benefactors. In the first place we shall always remember the action of King Oscar of Sweden in inaugurating the first meeting (followed by a second meeting in Christiania) from which this Council originated. Secondly we shall never forget the generous support which in a number of ways has always been given to us by the Danish Government, who not only has housed us very beautifully, but has undertaken such essential duties by allowing the Danish Foreign Office to act as a medium for certain essential correspondence with contracting Governments. Then there are our great Presidents: Dr. Herwig, Germany, Mr. W. E. Archer, United Kingdom, Mr. Rose, Germany, Dr. Otto Pettersson, Sweden. These may be regarded as the pioneer Presidents. They were followed by Mr. Henry Maurice, who was President for 18 years with great distinction. Then came Dr. Hjort, who is known as one of the greatest pioneers in the field of marine research. We recall also his great services during the difficult war years. Finally we have Dr. K. A. Andersson, who's christian names we have never discovered, so that they seem not to exist. We part with him with sadness and he will go down to posterity, with affection as 'K.A.'.

I will not burden you with a list of the many distinguished scientists, whose names illuminate the annals of the Council, but I must mention the name of Dr. Johs. Schmidt, specially as some of us have continuously received delightful hospitality from Madame Schmidt which will be to us a very precious memory, especially to those of us whose days in the Council are numbered.

Finally I must not close without taking this opportunity of expressing particularly how greatly honoured some of us have been by being received by His Majesty the King of Denmark, but that is not all: as on a previous occasion we have been honoured by the presence of Their Royal Highnesses and I wish them to know on behalf of the Council what an inspiration their presence here is as we stand on the threshold of the second 50 years."

At the Luncheon at Mölle, Sweden, on the 5th October 1952, Minister Hj. R. Nilsson, welcomed the Council and its guests to Sweden, and said:—

"I should like to express my great pleasure and pride that the international exploration of the sea seems to thrive in our country. The first meeting, in 1899, when the plans for the coming Council were made, took place at Stockholm, and it was also at Stockholm the Council gathered in 1927 to celebrate the 25th anniversary of its foundation. And now, when it is time again to celebrate an anniversary, I am happy to see that so many of the participants in the Council Meeting have taken the opportunity to come on the excursion to Swedish soil.

I bid you all heartily welcome. I shall not mention names, but I should like to address myself to my Danish colleague, Minister of Fisheries Knud Rée and Mrs. Rée, who have shown us the kindness to be present. It is also with great pleasure that I see so many countries represented. This is an illustration of the universality, which is the pillar of the Council. The isolation brought about by the war has ceased, and again men of science can meet for free discussions and free exchange of experiences, to the satisfaction and advantage not only to science, but also to practical life and thus to the ordinary man. The fact that the work of the Council recommenced so quickly after the war bears witness to the Council's strength of life and to the will to fruitful co-operation within the sphere of its activity. The Council can review its 50 years of achievements with pride, and with equal confidence and serenity look to the future.

With these words I ask the Council to accept my congratulations and I add the wish that the coming years may form an era of progress and light in the Council's history."

The President replied briefly on behalf of the Council.

Estimates for the Financial Year $^{1}/_{11}$ 1952—$^{31}/_{10}$ 1953.

EXPENDITURE

	D. kr.	D. kr.
I. Incidentals		
1. President	1,000.00	
2. Chairman of Consultative Committee	500.00	
3. Chairmen of Sub-Committees and Committees	25,200.00	
		26,700.00
II. Headquarter Staff		
1. General Secretary	15,000.00	
2. Assistant Secretary (General) to $^{31}/_{1}$ 1953	3,374.00	
3. Assistant Secretary (Information)	13,751.51	
4. Statistical Secretary	10,639.30	
5. Secretarial Assistant	10,055.48	
6. Clerical Assistant	8,301.78	
7. Part-time Secretarial Assistant	4,000.00	
		65,122.07
III. Hydrographical Staff		
1. Hydrographer	18,114.83	
2. Clerical Assistant	8,301.78	
3. Assistance	400.00	
4. Card Index work	1,500.00	
5. Synoptic Charts	4,800.00	
		33,116.61
IV. Office Expenses		18,750.00
V. Travelling Expenses		14,100.00
VI. Publications:		
1. Printing and Distribution	63,600.00	
2. Editor of the Journal	3,000.00	
3. Assistance to Editor of the Journal	1,500.00	
4. Editor of Statistics	2,000.00	
5. Editor of Plankton Sheets	1,000.00	
		71,100.00
VII. Pensions:		
Pension to Miss HANSTED	6,876.00	
Pension to Miss BRØNNICHE	7,353.00	
Premium, Pensioninsurance	5,200.36	
	19,429.36	
Less amount of interest yielded by Pension Fund	4,501.00	
		14,928.36
Estimated Excess of Income over Expenditure		9,482.96
		253,300.00

RECEIPT

		D. kr.	D. kr.
I. Contributions			
France		30,000.00	
German Federal Republic		30,000.00	
Great Britain		30,000.00	
Belgium		15,000.00	
Denmark		15,000.00	
Holland		15,000.00	
Iceland		15,000.00	
Ireland		15,000.00	
Norway		15,000.00	
Portugal		15,000.00	
Spain		15,000.00	
Sweden		15,000.00	
Finland		7,500.00	
			232,500.00
II. Interest			
On Bank Deposits	ca.	267.50	
On Investments		4,132.50	
			4,400.00
III. Sale of Publications	ca.	16,000.00	
Sale of Synoptic Charts	ca.	400.00	
			16,400.00
			253,300.00

Experts engaged on Fisheries Research in the Council's Area.

Name and Title	Special Subjects	Address
Belgium.		
Leloup, E., Dr., Conservateur, Directeur de l'Institut Maritime, Ostende	Biologie de la faune marine	31, Rue Vautier, Bruxelles.
Gilis, Ch., adjoint technique de l'Institut Maritime, Ostende	Recherches sur le hareng guai — le hareng plein. "Overfishing"	Zuidstraat, 16, Oostende.
Denmark.		
Tåning, Å. Vedel, Dr., Director	Marine Biology. Oceanography. Ichthyology	Danmarks Fiskeri- og Havundersøgelser, Charlottenlund Slot, Charlottenlund.
Andersen, K. P., Mag. scient.	Hydrography	
Andersen, Th., Cand. mag.	Biology of freshwater fish	
Bertelsen, E., Dr.	Biology of marine fish	
Boëtius, J., Mag. scient.	Marine Zoophysiology	
Grøntved, J., Mag. scient.	Phytoplankton, northern forms	
Hermann, F., Cand. mag.	Hydrography	
Jensen, Aage J. C., Dr.	Biology. Fluctuations in fishery yields	
Joensen, J., Mag. scient.	Faroe Cod and Halibut	
Kirkegaard, J. B., Cand. mag.	Marine fish. Transplantations	
Knudsen, J., Cand. mag.	Marine fish. Molluscs	
Larsen, K., Cand. mag.	Biology of Salmon and Trout	
Lund, S., Mag. scient.	Marine algae	
Otterstrøm, C. V., Mag. scient.	Freshwater fish. Pollution	
Poulsen, E. M., Dr.[1])	Biology. Crustaceans	
Rasmussen, C. J., Cand. mag.	Freshwater fish. Eel	
Ursin, E., Mag. scient.	Marine bottom invertebrates	
Steemann Nielsen, E., Prof., Dr. Advisor to D. F. H.	Phytoplankton	Danmarks farmaceutiske Højskole, Universitetsparken, Copenhagen.
Thomsen, H., Cand. mag. Advisor to D. F. H.	Hydrography	Meteorologisk Institut, Ordrup per Charlottenlund.
Ege, V., Dr.	Racial investigations. Oceanic fish	Carlsbergfondets Dana-samlinger, Charlottenlund Slot, Charlottenlund.
Strubberg, A., Cand. mag.	Statistics	Fiskeriministeriet, Borgergade 16, Copenhagen.
Hansen, P. M., Dr.	Greenland Cod	Grønlands Fiskeriundersøgelser, Charlottenlund Slot, Charlottenlund.
Kreutzmann, J.	Biology, Greenland fisheries	
Nielsen, J., Cand. mag.	Grenland Salmon and Herring	
Smidt, E. L. B., Dr.	Greenland fish and invertebrates	
Spärck, R., Prof., Dr., Director	Zoology. Oysters	Zoologisk Museum, Krystalgade 24, Copenhagen.
Jensen, Ad. S., Prof., Dr.	Ichthyology. Greenland fisheries	
Bruun, A. Fr., Dr.	Marine biology. Oceanography	
Thorson, G., Dr.	Ecology of marine invertebrates	
Kiilerich, A., Mag. scient.	Hydrography of Greenland waters	Grøndalsvej 66, Copenhagen.
Lundbak, A., Cand. mag.	Hydrography	Meteorologisk Institut, Toldbodvej 15, Copenhagen.
Smed, J., Mag. scient.	Hydrography	International Council, Charlottenlund Slot, Charlottenlund.
Finland.		
Järvi, T. H., Dr., Prof.	Salmonidae. Baltic Herring	Caloniusgatan 9 C, Helsinki.
Halme, E., Dr., Prof.	Plankton. Baltic Herring	Byrån f. Fiskeriundersökninger, Nätholmen, Helsinki.
Ehnholm, G., Dr.		
Hurme, S.	Cyprinidae, Esox	

[1]) *p. t.* Executive Secretary, ICNAF, St. Andrews, N. B. Canada.

Name and Title	Special Subjects	Address
Finland (continued).		
Segerstråle, S., Dr.	Bottom fauna. Crustacea	Norra Järnvägsgatan 13, Helsinki.
Purasjoki, K., Mag. phil.	Plankton. Bottom fauna	
Luther, A., Dr., Prof.	Turbellaria	
Välikangas, I., Dr., Prof.	Plankton	
Segerstråle, Curt, Mag. phil.	Cyprinidae, Esox	
Jurva, R., Prof., Director	Physical Oceanography	Havsforskningsinstitutet, Observatoriegatan 2, Helsinki.
Granqvist, G., Dr.	Physical Oceanography	
Hela, I., Dr.	Physical Oceanography	
Simojoki, H., Dr.	Hydrology	
Lisitzin, Eugenie, Dr.	Physical Oceanography	
Koroleff, F., Dr.	Chemistry of Sea Water	
Palosuo, E., Mag.	Ice Investigations	
Buch, K., Prof.	Chemistry of Sea Water	Rönnvägen 50, Helsinki.
Palmén, E., Prof.	Physical Oceanography	Högbergsgatan 1 B, Helsinki.
France.		
le Gall, Jean, Agrégé de l'Université, Ingénieur Chimiste, Directeur de l'Office Scientifique des Pêches..	Biologie marine. Thonidés, Clupéidés. Hydrologie générale	Office Scientifique et Technique des Pêches Maritimes, 59, Av. Raymond Poincaré, Paris (16ème).
Desbrosses, P., L.ès-Sc., Inspecteur Général	Océanographie. Hydrologie. Animaux marins comestibles	
Faure, L., L.ès-Sc., Chef de Laboratoire	Sprat. Dorade. Invertébrés marins..	
Fleury, Jacqueline, L.ès-Sc.	Plancton animal (Chétognathes)	
Ladouce, R., L.ès-Sc.	Biologie des Mollusques comestibles	
Morice, J., L.ès-Sc.	Biologie des Sparidés et des Crustacés Océanographie et biologie aux Antilles	
Ancellin, J., Dr. vét., Chef de Laboratoire	Harengs. Plies	Laboratoire de l'Office des Pêches, — B.P. 42. Boulogne s/Mer, Pas-de-Calais.
Creach, P., Dr.ès-Sc., Dr. pharm., Chef de Laboratoire	Physiologie de la nutrition. Clupéidés.	— 20 Cours Pasteur, Bordeaux.
Letaconnoux, R., L.ès-Sc., Chef de Laboratoire	Merlu. Chinchard. Thon. Sardine. ..	— 74, Allée du Mail, La Rochelle.
Furnestin, J., Dr.ès-Sc.	Océanographie physique et biologique. Clupéidés. Thonidés	Institut Scientifique des Pêches Maritimes, Casablanca, Maroc.
Bouxin, H., Agrégé de l'Université, Dr.ès-Sc.	Ecologie marine. Plancton littoral...	Lab. Marit. du Collège de France, Concarneau, Finistère.
Drach, P., Prof. à la Faculté des Sciences, Paris. Sous-Directeur.	Crustacés. Ecologie néritique	Station Biologique, Roscoff, Finistère.
Pérès, J. M., Professeur à la Faculté des Sciences de Marseille	Invertébrés marins	Station Biologique, Endoume, Marseille.
Petit, G., Dr.ès-Sc., Prof. à la Sorbonne, Chef de Laboratoire	Ecologie des eaux. Migration des poissons	Laboratoire Arago, Banyuls s/Mer, Pyrénées Orient.
Dieuzeide, R., Dr.ès-Sc., Dr. en Médecine	Clupéidés. Thonidés	Station d'Aquiculture et de Pêche, Castiglione, Algérie.
Heldt, Jeanne, Dr.ès-Sc.	Crustacés. Plancton	Station Océanographique, Salammbô, Tunisie.
Heldt, H., Directeur	Thonidés. Clupéidés. Faune des lacs littoraux	
Cadenat, J., L.ès-Sc.	Systématique et biologie des poissons. Echinodermes	Laboratoire de Biologie Marine de Gorée, Dakar (Sénégal).
Monod, T., Dr.ès-Sc., Directeur	Crustacés et Poissons	Institut Français d'Afrique Noire, Dakar (Sénégal).
Postel, E., Chef de Service		Inspection Générale de l'Elevage à Dakar (Sénégal).
Rouch, Jules, Prof. Honoraire, Directeur	Océanogr. physique. Questions polaires	Musée Océanographique de Monaco, Monaco-Ville (Principauté).

Name and Title	Special Subjects	Address
France (continued).		
Dyèvre, H., Ingénieur Général, Directeur	Océanographie physique. Hydrographie	Service Hydrogr. de la Marine, 13, Rue de l'Université, Paris.
Gougenheim, A., Ingénieur Hydrographe en Chef de la Marine, Chef de Section	Océanographie physique. Hydrologie.	
Bertin, L., Agrégé, Dr.ès-Sc., Prof. au Mus. Nat. Hist. Natur.	Océanographie. Poissons apodes et leptocéphales; Poissons abyssaux.	57, Rue Cuvier, Paris.
Teissier, G. Professeur à la Faculté des Sciences	Biologie marine	1, Rue Victor Cousin, Paris.
Prenant, M., Professeur à la Faculté des Sciences	Biologie marine. Physiologie	
Budker, P., Sous-Directeur des Pêches Coloniales au Mus. Nat. Hist. Natur.	Biologie marine	
Fage, L., Prof. au Mus. Nat. Hist. Natur. et à l'Inst. Océanogr.	Biologie marine	61, Rue de Buffon, Paris.
Forest, J., L.ès-Sc., Assistant au Mus. Nat. Hist. Natur.	Crustacés	
Fontaine, M., Dr.ès-Sc.	Physiologie des poissons migrateurs	25, Rue Pierre Nicole, Paris.
Larrieu, J., Ingénieur des Eaux et Forêts	Poissons migrateurs	61, Rue de Varenne, Paris.
Legendre, R., Dr.ès-Sc., Prof. à l'Inst. Océanogr.	Océanographie physique et biologique	27, Rue d'Alésia, Paris.
Bernard, F., Dr.ès-Sc., Professeur de Zoologie	Plancton des mers chaudes	Faculté des Sciences, l'Université, Alger, Algérie.
Vibert, R., Inspecteur des Eaux et Forêts	Saumon et Truite	8, Rue Adoue, Oloron-St-Marie (B.P.)
Germany.		
Hagmeier, Prof. Dr. A., Director	Marine ecology Bottom organisms. Oysters	Biologische Anstalt Helgoland, List/Sylt.
Aurich, Dr. H.	Plancton. Fish fry	
Kornmann, Prof. Dr. P.	Botany. Algae	
Werner, Dr. B.	Zoology. Molluscs	
Ziegelmeier, Dr. E.	Bottom animals. Hydroids	
Kotthaus, Dr. A.	Fishery biology and statistics	Biologische Anstalt Helgoland, Abt. Fischereiforschung, Bremerhaven-F, F. A. Pust-Platz.
Schmidt, Dr. U.	Fishery biology and statistics	
Lücke, Prof. Dr. Fr., Director	Technological research of fishery products	Bundesanstalt für Fischerei, Inst. f. Fischverarbeitung, Hamburg-Altona, Elbchaussee 92.
Hutschenreuter, Dr. R.	Technological research of fishery prod.	
Junker, Dr. M.	Physiology	
Kreuzer, Dr. R.	Bacteriology	
Ludorff, Dr. W.	Chemistry	
Wünsche, Dr. G.	Chemistry	
Meyer-Waarden, Dr. P. F., Institutsleiter	Inshore fisheries. Electric fishing	Bundesanstalt für Fischerei, Inst. f. Küsten- u. Binnenfischerei, Hamburg 36, Neuerwall 70/74.
Bahr, Dr. C.	Inshore fisheries. Mussels	
Kühl, Dr. H.	Hydrobiology	
Mann, Dr. H.	Fresh water fisheries. Physiology	
v. Brandt, Dr. A., Institutsleiter	Fishing implements. Preserving of fish nets	Bundesanstalt für Fischerei, Inst. f. Netz — u. Materialforschung, Hamburg 36, Neuerwall 70/74.
Klust, Dr. G.	Fishing implem. Preserving of fish nets	
Schärfe, Dr. J.	Behaviour of fishes	
Lundbeck, Dr. J., Institutsleiter	Fishery biology and statistics	Bundesanstalt für Fischerei, Inst. f. Seefischerei, Hamburg 36, Neuerwall 70/74.
Schnakenbeck, Prof. Dr. W., Director	Fishery biology. Herring	
Krefft, Dr. G.	Fishery biology. Herring	
Meyer, Dr. A.	Fisheries	
Schubert, Dr. K.	Fisheries. Whaling	

Name and Title	Special Subjects	Address
Germany (continued).		
Böhnecke, Dr G., President	Hydrography	Deutsches Hydrographisches Institut, Hamburg 11, Seewartenstr. 9.
Dietrich, Dr. G.	Hydrography	
Goedecke, Dr. E.	Hydrography	
Hansen, Dr. W.	Hydrodynamics	
Joseph, Dr. J.	Hydrography	
Kalle, Dr. K.	Marine chemistry	
Neumann, Dr. H.	Oceanographical observations	
Sendner, Dr. H.	Oceanographical methods	
Krause, Dr. H.	Ecology of Benthos	Forschungsstelle Norderney.
Linke, Dr. O.	Sediments. Hydrography	
Wohlenberg, Dr. E.	Ecology of coast	Forschungsstelle Westküste, Husum, Nissenhaus.
König, Dr. D.	Ecology of coast	
Geisler, Dr. R.	Fishery sciences	Institut für Fischereiwissenschaft, Hamburg 36, Holstenwall 24.
Friedrich, Prof. Dr. H., Director	Marine ecology	Institut für Meeresforschung, Bremerhaven-G., Am Handelshafen 12.
Brandes, Dr. C. H.	Plankton, Parasitology of marine fishes	
Dietrich, Dr. R.	Chemistry of fishes	
Höhnk, Dr. W.	Marine fungi	
Lüneburg, Dr. H.	Hydrography. Marine chemistry, especially estuaries	
Neumann, Dr. G.	Hydrography	Institut f. Meereskunde der Universität Hamburg, Rote Baum Chaussee 33.
Wüst, Prof. Dr. G., Director	Physical oceanography	Institut für Meereskunde der Universität Kiel, Hohenbergstr. 2.
Hoffmann, Prof. Dr. C.	Botany	
Kändler, Prof. Dr. R.	Fishery biology	
Krey, Dr. J.	Plankton productivity	
Lühmann, Dr. M.	Fishery biology	
Schlieper, Prof. Dr. C.	Zoology. Physiology	
Weidemann, Dr. H.	Physical oceanography	
Wyrtki, Dr. K.	Hydrography. Marine optics	
Bückmann, Dr. A., Head of Departm.	Fishery biology	Max-Planck-Institut für Meeresbiologie, Wilhelmshaven.
Gillbricht, Dr. M.	Phytoplankton and its hydrographical conditions	
Harder, Dr. W.	Fish behaviour. Anatomy	
Hempel, Dr. G.	Fish fry	
Caspers, Dr. H.	General hydrobiology	Zoologisches Institut der Universität Hamburg, Bornplatz 5.
Remane, Prof. Dr. A.	Zoology	Zool. Institut der Universität Kiel, Hegewischstr. 3.
Schulz, Dr. E.	Ecology of bottom fauna	
v. Buddenbrock, Prof. Dr. W.	General physiology	Zool. Institut der Universität Mainz.
Great Britain.		
England.		
Graham, M., O.B.E., M. A.	Population studies of fish stocks	Fisheries Laboratory, Lowestoft.
Wimpenny, R. S., M. Sc.	Plankton ecology. Plaice biology	
Lumby, J. R., Lt. Cdr.	Hydrography	
Lee, A. J., B. A.	Hydrography (Arctic)	
Simpson, A. C., B. Sc.	Census of Plaice eggs	
Cattley, J. G., M. Sc.	Zooplankton	
Cushing, D. H., M. A.	Phytoplankton. Plankton physiology	
Trout, G. C., B. Sc.	Arctic Cod and Haddock	
Corlett, J., M. Sc.	Arctic Plankton	
Hodgson, W. C., Dr.	Pelagic fish	
Richardson, I. D., B. Sc.	Pelagic fish	
Beverton, R. J. H., M. A.	Population studies on Arctic fish stocks	
Margetts, A. R., B. A.	Comparative fishing. Fish migrations	
Russell, F. S., F. R. S.	Zooplankton. Hydromedusae	Marine Biol. Assoc., Citadel Hill, Plymouth.
Atkins, W. R. G., Dr., F. R. S.	Plant and general physiology. Radiation. Preservation of textile fibres	
Harvey, H. W., Dr., F. R. S.	Chemical constitution of sea water	
Steven, G. A., B. Sc.	Fish, fisheries and bottom fauna	

Name and Title	Special Subjects	Address
Great Britain (continued).		
Wilson, D. P., M. Sc.	Polychaete development. Larval settlement. Marine aquaria	Marine Biol. Assoc., Citadel Hill, Plymouth.
Cooper, L. H. N., Dr.	Chemical and physical oceanography	
Spooner, G. M., M. A.	General zoology. Fauna of estuaries. Gammaridae	
Parke, Mary W., Dr.	Algae	
Hill, D. K., M. A.	Physiology of marine animals	
Corbin, P. G., B. A.	Zooplankton	
Vevers, H. G., B. A.	Breeding biology. Echinoderms	
Hardy, A. C., Prof., F. R. S.	Fisheries and Plankton	Dept. of Zoology, Oxford University, Oxford.
Carruthers, J. N., Dr.	Hydrography	The National Institute of Oceanography, Wormley near Godalming, Surrey.
Savage, R. E.	Shellfish and public health	Fisheries Experiment Station, Conway.
Sherwood, H. P., B. A.	Mussel cleansing	
Cole, H. A., Dr.	Oyster research	
Crisp, D. J., Dr.	Cirripedes	Marine Biol. Stat. University College of North Wales, Bangor, Carnavonshire.
Knight-Jones, E. W., Dr.	Marine invertebrate larvae	
Spencer, C. P., Dr.	Algal biochemistry	
Burdon-Jones, C., Dr.	Protochordata embryology	Department of Zoology, University College of North Wales, Aberystwyth.
Jones, W. C., M. A.	Physiology of sponges	
Erichsen Jones, J., Dr.	Toxicity of metallic salts to fish	
Frost, W. E., Dr.	Eel and Salmon	Freshwater Biol.Assoc., The Ferry House, Far Sawrey, Ambleside, Westmorland.
Colman, J. S., M. A.	Shore ecology. Chaetognaths	Marine Biological Station, Port Erin (University of Liverpool), Isle of Man.
Bruce, J. R., M. Sc.	Manx fauna	
Jones, N. S., Dr.	Benthos and fish food	
Williamson, D. I., Dr.	Zooplankton	
Lodge, Sheila, M., Dr.	Algology	
Bowers, A. B., B. Sc.	Herring, Whiting	
Slinn, D. J., B. Sc.	Hydrography	
Smith, W. C.	Herring	
Orton, J. H., Prof., F. R. S.	Sex in Salmon	Department of Zoology, The University, Liverpool.
Jones, J. W., Dr.	Sex in Salmon	
Crofton, H. O., Dr.	Parasitism in Trout	
Fraser, P. G., Miss, B. Sc.	Parasitism in Trout	
Spaul, E. A., Prof.	Parasitism in fish	Dept. of Zoology, The University, Leeds.
Hobson, A. D., Prof., F. R. S. E.	General marine zoology. Parasitology	King's College, University of Durham, The Dove Marine Laboratory, Cullercoats, Northumberland.
Bull, H. O., Dr.	Fish behaviour. General marine fauna	
Thompson, J. A., B. Sc.	Inshore fisheries	
Bossanyi, J., B. A.	Plankton. Benthos relationships	
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Allan, I. R. H., B. A.	Salmon investigations	
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Craig, R. E., B. Sc.	Physics. Hydrography	
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Ellis, R. W., B. Sc.	Whiting. Fishing gear	
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Pope, J. A., M. A.	Statistics	
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Saville, A., B. Sc.	Plankton (fish eggs and larvae)	
Steele, J. H., B. Sc.	Hydrography	
Tait, J. B., Dr., F. R. S. E.	Hydrography	
Thomas, H. J., Dr.	Bottom fauna. Crustacea	
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Brooks, A. J., Dr.	Botany. Phytoplankton	
Holden, A. V., B. Sc.	Freshwater chemistry	
Munro, W. R., B. Sc.	Bottom fauna (freshwater)	
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Marshall, Sheina M., Miss, Dr., F. R. S. E.	Plankton	
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Pike, R. B., Dr.	Crustacea	
Millar, R. H., Dr.	Oysters	
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Smyth, J. C., Dr.	Ecology of marine muds and certain types of shore. Growth of otoliths in flatfish	
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Hunter, W. Russell, B. Sc.	Freshwater biology	
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Hansen, Sigfred	Rearing of marine fish	
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France:	Mr. R. Vibert,
Germany:	Prof. A. Willer†,
failing him	Prof. R. Kändler,
Holland:	Mr. G. J. Lienesch,
Iceland:	Mr. Petur Jónasson,
Ireland:	**Dr. A. E. J. WENT, Chairman,**
Norway:	Mr. L. Rosseland,
Scotland:	Mr. K. A. Pyefinch,
Spain:	Dr. Juan Cuesta,
Sweden:	Dr. J. Hult,
	Dr. G. Alm.

Shellfish Committee.

Belgium:	Dr. E. Leloup,
	Mr. Ch. Gilis,
Denmark:	Mr. E. Ursin,
England:	Dr. H. A. Cole,
	Mr. G. D. Waugh,
Finland:	Dr. S. Segerstråle,
France:	Mr. P. Desbrosses,
	Mr. R. Ladouce,
Germany:	Dr. P.-Fr. Meyer,
Germany:	Prof. R. Kändler,
Holland:	**Dr. B. HAVINGA, Chairman,**
	Dr. P. Korringa,
Ireland:	Mr. F. A. Gibson,
Norway:	Mr. B. Rasmussen,
Portugal:	Dr. A. de M. Ramalho,
Scotland:	Dr. C. E. Lucas,
	Dr. H. J. Thomas,
Spain:	Mr. J. Amengual.

Hydrographical Committee.

Belgium:	Dr. E. Leloup,
failing him	Mr. Ch. Gilis,
Denmark:	Mr. Helge Thomsen,
failing him	Mr. F. Hermann,
England:	Mr. J. R. Lumby,
Finland:	Dr. G. Granqvist,
France:	Mr. P. Desbrosses,
Germany:	Dr. G. Böhnecke,
Holland:	Vice-Admiral J. W. Termijtelen,
failing him	Dr. P. Groen,
Iceland:	Mr. U. Stefánsson,
failing him	Dr. H. Einarsson,
Ireland:	Dr. A. E. J. Went,
Norway:	**Prof. H. U. SVERDRUP, Chairman,**
	Dr. Jens Eggvin,
Portugal:	Dr. A. de M. Ramalho,
Scotland:	Dr. John B. Tait,
Spain:	Dr. Nicanor Menéndez,
failing him	Commander Fernando Balén,
Sweden:	Dr. B. Kullenberg.

Plankton Committee.

Belgium:	Dr. E. Leloup,
Denmark:	Mr. J. Grøntved,
	Prof. E. Steemann Nielsen,
England:	Mr. F. S. Russell,
	Mr. R. S. Wimpenny,
Finland:	Prof. T. H. Järvi,
France:	Dr. L. Fage,
	Prof. F. Bernard,
	Mlle J. Fleury,
Germany:	Dr. J. Krey,
Holland:	Dr. B. Havinga,
Iceland:	Dr. H. Einarsson,
Ireland:	Dr. A. E. J. Went,
Norway:	**Prof. T. BRAARUD, Chairman,**
	Mr. Kr. Fr. Wiborg,
Scotland:	Dr. C. E. Lucas,
failing him	Dr. J. H. Fraser,
Spain:	Dr. J. Cuesta,
Sweden:	Dr. Hans Höglund.

Statistical Committee.

Belgium:	Mr. Ch. Gilis,
Denmark:	Dr. Aa. J. C. Jensen,
England:	Mr. M. Graham,
failing him	Mr. A. R. Margetts,
Finland:	Prof. T. H. Järvi,
France:	Mr. M. Terrin,
failing him	Mr. A. Perier,
Germany:	Dr. J. Lundbeck,
Holland:	Mr. G. J. Lienesch,
Iceland:	Mr. Á. Fridriksson,
Ireland:	Dr. A. E. J. Went,
failing him	Mr. F. A. Gibson,
Norway:	Prof. Johan T. Ruud,
failing him	Mr. Johs. Sellæg,
Portugal:	Dr. A. de M. Ramalho,
Scotland:	Dr. C. E. Lucas,
Spain:	Don Manuel Rodriguez Rey, or Dr. Luis Bellón,
Sweden:	**Dr. NILS ROSÉN, Chairman,** Mr. S. Sahlin.

Finance Committee.

Mr. A. T. A. DOBSON, Chairman,
Mr. G. J. Lienesch,
Dr. Å. V. Täning,
Mr. B. Dinesen,
Dr. B. Kullenberg,
Dr. E. Leloup,
Dr. A. E. J. Went.

Special Sub-Committees.

Sub-Committee on the Faroe Question.

Dr. Å. VEDEL TÅNING, Chairman,
Mr. R. S. Wimpenny,
Prof. J. le Gall,
Dr. B. Havinga,
Mr. Birger Rasmussen,
Dr. C. E. Lucas,
Mr. Á. Fridriksson.

Sub-Committee for the Standardization of Zooplankton Methods.

Mr. F. S. RUSSELL, Chairman,
Mr. R. S. Wimpenny,
Dr. J. H. Fraser,
Dr. H. Höglund,
Mr. K. F. Wiborg.

Sub-Committee for Procuring Regular Currents Data.

Dr. J. N. CARRUTHERS, Chairman,
Mr. L. Faure, Dr. P. Groen, Lft.-Cdr. J. R. Lumby.

ENGLISH VERSION

SPECIAL SCIENTIFIC MEETINGS

General Meeting.

In the Chair: Dr. C. E. Lucas.

The Chairman opened the meeting and the following contributions were given and discussed:

J. R. Lumby: "A Note on Hydrographic Charts."[1])
J. Eggvin: "Contribution to the Oceanography of the Norwegian Sea."[2])
M. Fontaine: "The Function of the Pituitary Gland of Fishes in its Relations with their Morphology and Behaviour."[3])
Films. Trawl in Action (Lowestoft). Seine-Net in Action (Aberdeen).
R. J. H. Beverton: "Some Observations on the Principles and Methods of Fishing Regulations."[3])

[1]) To appear in a later issue of the Journ. du Conseil.
[2]) To be published in a later forthcoming volume of the series Rapp. et Proc.-Verb.
[3]) To appear in Journ. du Conseil XIX, 1.

REPORTS

Report and Recommendations of the Consultative Committee.

Chairman: Mr. R. S. Wimpenny.

I. Proceedings.

1. As Mr. Graham, the former Chairman, had resigned on account of ill health the President opened the meeting. Mr. Wimpenny was elected Chairman.

In the absence, due to illness, of M. le Gall, it was agreed that Professor Fage should be Chairman of the Atlantic Committee Meeting in his place, and that Dr. Lucas should be Chairman of the General Meeting.

2. Organization of Committee Work.

Professor Sverdrup's enquiry as to whether detailed programmes of contributions were available to each member elicited the information that material had been so late in arriving that a provisional list could only be written the previous evening. Professor Sverdrup stressed the importance of getting information in time. In the second sitting, as a result of suggestions by Profs. Sverdrup and Braarud and the Chairman it was decided to try and arrange for a final date of acceptance for papers submitted to Committees so that a full time table and copies of papers could be prepared in sets marked with the names of Committee men and to hold a further adequate number of sets of papers for guests and non-members, all to be kept at a distributing centre.

3. Arrangement of Meetings 1953.

a) It was suggested by Mr. Rollefsen that a general meeting on the cod should be held in 1953, and it was agreed that the matter should be considered by the relevant committees for final decision at the last Consultative Committee's meeting. Recommendation II, 2 was then accepted.

b) Mr. Friðriksson stressed the importance of obtaining time for a discussion on echo-sounders and ASDIC, and it was agreed that this should be given in the Pelagic Meeting.

4. Publications.

a) M. Desbrosses read a letter from M. le Gall (see Appendix 1) on the scope of the *Annales Biologiques*, which the members were asked to consider within their committees; in the second sitting the discussion resulted in an agreement that there was no need to alter the scope of the Annales as already defined.

The 31st October was accepted as the last date for submitting amendments to the proofs of Vol. VIII distributed at the meeting.

b) In connexion with the biological work of the Council and in particular that concerned with the *Annales Biologiques* and the *Rapports et Procès-Verbaux* it was decided that advice for the Secretary General would be arranged by Dr. Å. VEDEL TÅNING. The question of a biological consultant should be discussed at next year's meeting.

c) The position of the Secretary General in connexion with the definition of his duties as laid down in the Statutes was discussed and it was agreed that he was formally responsible for the biological, hydrographical, and routine work of the Council, but that the word "conduct" in paragraph 2 of the definition of his duties was not appropriate, and a substitute for this word should be sought by the Bureau so as to produce an amendment of the Statutes at some suitable opportunity.

d) It was recommended that the rate payable for General Articles in the *Journal du Conseil* be raised so as to conform with the increased rate payable for reviews.

5. Intercourse with other Organizations.

A letter from Mr. DE WATTEVILLE (Appendix 2) on the position of international studies of seaweed was presented at the first sitting and Chairmen of Committees were asked to ascertain the views of their members in this attitude. As an international symposium was already arranged to take place in Norway in three years' time it was agreed at the second sitting that there was no present need for the Council to offer any special facilities and that although no action was to be taken now, the Council should be prepared to consider the matter with an open mind should the need arise.

6. General Reports of Committees.

a) The reports of the Committees and Sub-Committees were considered and passed at the second sitting. As the result of elections in the Committees, Dr. JENSEN, Dr. CUESTA, and Dr. WENT replaced Dr. POULSEN, Dr. RAMALHO, and Mr. SØMME, and the Chairman thanked outgoing Chairmen for their services and welcomed the newly appointed. Recommendations 1—5 were accepted and in addition the following remarks and suggestions were made:—

b) The appointment of Chairmen at next year's session for the Northern Seas, Atlantic, and Pelagic Committees was discussed and it was decided that these should be Dr. LUCAS, Prof. LE GALL, and Mr. FRIÐRIKSSON respectively.

c) Recommendation 2 of the Hydrographical Committee was withdrawn by Prof. SVERDRUP as it was not supported by the Herring Sub-Committee.

d) It was noted that there had been a high standard of papers presented at the meeting of the Committees and at the General Meeting, and it was resolved that papers presented at the meetings of the Council should be printed, if offered, in the Council's publications. The Chairmen of Committees are requested to ask if the paper is so offered; if not, they should ask for a copy to be deposited in the Council's archives, the appropriate particulars being communicated to the Member Governments from time to time.

7. Conclusion.

a) The President addressed the meeting shortly and stated that there had been a moderate improvement in the finances of the Council.

b) The Chairman thanked all present for their effective co-operation and wished Dr. POULSEN in particular success in his new position with ICNAF.

II. Recommendations.

1. General Reports of Committees.

The reports of Committees and Sub-Committees were accepted and the following proposals approved in addition to those set out separately hereafter.

a) Herring Sub-Committee: seaweed experts (Rec. 2) (see above I, 5) and contributions on fish detection (Rec. 3) (see above I, 3 b).

b) Hydrographical Committee: continuation of a Sub-Committee on Currents Data (Rec. 2).

c) Hydrographical-Biological Sub-Committee: dissolution of the Sub-Committee.

d) Statistical Committee: statistics regarding fishing effort.

2. Special Scientific Meeting 1953.

"The Cod" was decided upon as the subject of a Special Scientific Meeting during the next meeting of the Council and Mr. ROLLEFSEN agreed to act as convener with the assistance of Dr. PAUL M. HANSEN as reporter.

3. Intermediate Meeting.

It was recommended that in order to deal with the hydrographic observations from the joint programme in the Norwegian Sea there should be a meeting of hydrographers and others concerned in Bergen in February 1953. Professor SVERDRUP in consultation with Dr. TÅNING and Mr. ROLLEFSEN would convene the meeting and decide upon its composition. The meeting should consist of not more than 6 persons and last not longer than 7 days, the expenses to be borne by the Council.

4. Publications.

a) It was agreed in principle that a paper of about 300 pages on *Neothunnus albacora* by LUIS BELLÓN should have part of its expenses paid by the Council. No detailed figure was available, and a request has been made for the cost to be estimated in two parts; (i) the cost of production and (ii) the cost of the reprints. These figures would be sent to the General Secretary for consideration at the May Meeting of the Bureau.

b) It was recommended (i) that production and publication of the hydrographic synoptic charts, now

carried out by the Fisheries Laboratory, Lowestoft, should be undertaken by the Service Hydrographique, from 1st November 1952; (ii) that participating countries should be entitled to receive a limited number of sets gratis, a charge being made for any additional sets required by these countries and also for sets required by institutions in non-participating countries, and (iii) that the Hydrographer of the Council should pay a visit to Lowestoft to take over the production of the charts.

c) It was recommended that a Co-Editor of the Plankton Identification Sheets be appointed in place of the late Dr. P. JESPERSEN; and that Dr. GUNNAR THORSON, of the University of Copenhagen, be invited to take this appointment at the same fee as before.

5. International Co-operation.

The Committee endorsed the Salmon and Trout Committee's recommendation that a letter be sent to the Government of Northern Ireland expressing the Council's satisfaction with the valuable work on salmon tagging being done along the northern coast of Ireland and hoping that these experiments may be continued and extended.

APPENDIX 1

Note by Mr. JEAN LE GALL: The Scope of the Annales Biologiques.

IF I have correctly interpreted Professor HJORT's definition of the *Annales Biologiques* (see Ann. Biol. I, 1943, p. 6): "to collect all results of importance for the understanding of the fluctuations in the marine populations as well as their conditions of existence and changes in a special publication, for which the name '*Annales Biologiques*' was adopted", these results should not be limited to the variations in temperature and salinity and to the biometric statistics of marine commercial species—which have now become routine work; but they should also take into account the observations made on the fluctuations of the marine commercial fauna and flora (occurrence of new species in a sector, description of edible species not well known, etc.) and further the inter-reactions between the external and internal medium (for instance the work of FONTAINE), with the following reservation:— that the paper should state the methods used, the results obtained, and the anticipated conclusions, and generally not exceed (to mention figures) two pages, or exceptionally three if warranted by the importance of the paper.

APPENDIX 2

Extract of a letter from Mr. J. E. DE WATTEVILLE on Seaweed Research.

THE attention of the Fisheries Departments in Great Britain has been drawn by the Institute of Seaweed Research (whose headquarters are at Inveresk, Midlothian) to the fact that research in the field of seaweed utilisation and development is being carried out in a number of countries; and the Institute has suggested that it would be of great advantage if an international forum were available through which the results of such research could be discussed, compared and possibly co-ordinated.

An International Seaweed Symposium was held in Edinburgh under the auspices of the Institute in July of this year. This Symposium attracted some 160 representatives and a large number of contributions from 30 countries and Colonial dependencies. The Conference decided to hold a similar international meeting in Norway in three years' time, the responsibility for the organisation of which will probably be undertaken by the Norwegian Seaweed Research Institute in Oslo.

It appears to the Departments that, while seaweed research extends beyond the field in which the International Council operates, the subject is one in which the Council should be closely interested and that the Council might consider the provision from time to time of facilities for discussion of it.

Reports and Programmes of Committees and Sub-Committees.

Northern Seas Committee.

In the Chair: Mr. G. Rollefsen.

The Chairman opened the meeting and the following papers were read and discussed:—

1. H. Mosby: "The Bottom Water at Weather Ship Station 'M'."
2. J. B. Tait: "The Quantitative Assessment of the Atlantic Current in the Faroe-Shetland Channel."
3. F. Devold: "Preliminary Results of the Cruises in the Norwegian Sea with 'G. O. Sars' 1952."
4. G. Rollefsen: "The Selectivity of different Fishing Gears used in Lofoten."
5. G. Dannevig: "Tagging Experiments on the Lofoten Banks 1947—52."
6. G. Trout's paper presented by R. J. Beverton: "English Cod Tagging in the Barents Sea."

North-Eastern Area Sub-Committee.

Chairman: Mr. G. Rollefsen.

I. Proceedings.

1. The members gave short statements concerning investigations being made in the area during 1952 and for the special investigations and routine work planned for 1953. The problems likely to be given first priority in 1953 were discussed.

2. Two letters, submitted to the members by the Consultative Committee, were considered. In the case of the letter by M. le Gall, "L'esprit des Annales Biologiques", the Sub-Committee felt unable to express an opinion on the question raised since they lacked information concerning the reasons for the steps taken. As regards the letter from Mr. de Watteville on the seaweed question, whether or not seaweed should become a part of the Council's interests, the Sub-Committee thought that such decision should depend upon its acceptability to a special seaweed sub-committee.

3. Mr. G. Rollefsen re-elected Chairman.

II. Programme of Work.

a) In 1953 Denmark will possibly send a smaller ship to the Barents Sea to undertake tagging experiments on plaice.
b) England will continue the work in the Barents Sea and along the Norwegian coast to study the correlation between sea temperatures and concentrations of cod, migrations of cod, and drift and distribution of cod larvae. The distribution of capelin and plankton will also be studied.
c) France has planned hydrographic work in the area.
d) Germany will continue the sampling of cod, haddock, coalfish, and redfish especially for the study of age and size distribution and for population studies.
e) Iceland will continue the tagging of herring.
f) Norway is prepared to carry on the routine work in the coastal waters and has planned cruises with M/S "G. O. Sars" in the Barents Sea and the Norwegian Sea. A definite programme for these cruises will be given in the near future.
g) Scotland has planned larval haddock investigations which may be extended to the North-Eastern Area.

III. Recommendation.

The North-Eastern Area Sub-Committee recommends that a special scientific meeting be held at the next Council Meeting to deal with cod problems in all areas within the Council's sphere of interest.

The Sub-Committee proposes that Mr. G. Rollefsen should be the convener.

North-Western Area Sub-Committee.

Chairman: Dr. Å. Vedel Tåning.

I. Proceedings.

1. The Chairman welcomed the members and guests and stressed the importance of Germany participating in the work. The Chairman considered briefly the important work carried out in the area by the several research vessels during the year and drew attention to the new annex laboratories which now are or will be in action in Faroe and West Greenland.

The new list of members was approved and the administrative report and the report of the Committee to the *Annales Biologiques* were adopted by the Committee.

2. Communications. The following papers were read and discussed:—

Árni Friðriksson: "The Pelagic Catches of Saithe in 1952 (Iceland)."

Paul M. Hansen: "Cod Investigations in West Greenland Waters in 1952."

F. Hermann: "Hydrographic Conditions on West Greenland Fishing Banks in 1952."

Jón Jónsson: "Review of the Icelandic Stock of Cod with special regard to 1952."

Birger Rasmussen: "Hydrography and the Cod Fishery in West Greenland Waters."

The new observations from 1952 will in due course be published in the *Annales Biologiques*.

3. The Chairman pointed out that collections of material for supplementing the bibliography on "Climatic Changes" will continue as in previous years.

4. Dr. Å. Vedel Tåning re-elected Chairman.

II. Programme of Work.

The general programme agreed upon in 1949 was considered, but no alterations or amendments were proposed.

Details of the programme to be carried out in 1953 will be arranged by correspondence, but meanwhile the position is as follows:—

Belgium: no work at sea in 1953 in the area.

Denmark: ordinary routine work in Faroese and Greenland waters, by, *inter alia*, "Dana" and "Adolf Jensen" and collection of material from commercial catches. Routine hydro-biological sections in the North Atlantic as previously.

England: possibly two cruises, about August, by R/S "Ernest Holt" to South Greenland waters, programmes to be arranged by correspondence.

France: inspection vessel "Aventure" will carry out work in Greenland and Labrador waters, possibly also off Rockall.

Holland: no work at sea in 1953 in the area.

Iceland: ordinary routine work at Iceland as in previous years, especially on cod and herring; the cruises by R/S "Maria Julia" are, however, not yet fixed. Material from commercial catches from trawlers operating in Greenland waters will be secured.

Ireland: no work at sea in 1953 in the area.

Norway: material from catches of liners and trawlers operating in Greenland waters will be secured; hydrographical observations will be carried out and also tagging of cod.

Scotland: research vessels will operate in Faroe, Iceland, and East Greenland waters as in the previous year; the specified programme will be agreed upon later.

Sweden: the research vessel "Skagerak" will operate in Shetland waters and west of Scotland as in previous years.

III. Recommendations.

1. It was agreed to support the recommendation of the North-Eastern Area suggesting that a cod meeting be held at the next annual meeting.

2. It is recommended that the important material of hydrographical observations from the Norwegian Sea collected by the co-operative work carried out during recent years should be worked out and published in the Council's publications at the earliest possible moment.[1])

The Sub-Committee on the Faroe Question.

The Chairman, Dr. Å. Vedel Tåning, reported on the work in progress, especially that which is carried out by Mr. J. S. Joensen at the annex laboratory in Thorshavn. Also the statistical data available from post-war years were discussed.

As the work on the question is likely to continue for several years in accordance with the programme agreed upon in 1948 (see Rapp. et Proc.-Verb. Vol. No. 124, p. 37, Rec. 1), results on which a proposal can be based will first be obtained later on. It was agreed that the question should be considered again next year.

The members promised to procure some material of interest to the Sub-Committee, especially statistical data from English and Scottish trawlers.

The revised list of members was accepted.

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[1]) Accepted by the Consultative Committee under the form of Rec. 3.

North Sea Sub-Committee.

Chairman: Dr. C. E. Lucas.

I. Proceedings.

The Chairman opened the meeting and welcomed the various visitors and the members of the Sub-Committee.

The Sub-Committee had before them copies of a note, submitted to them by the Consultative Committee, from M. le Gall, "L'esprit des Annales Biologiques". No need appeared to be felt for any change in the present regulations governing the nature of the articles accepted for the Annales.

Advance copies of the administrative report and the *Annales Biologiques* for 1951 were available for the Sub-Committee, and both were submitted to the contributors for proof correction.

Communications.

The papers mentioned below were presented to the Sub-Committee, most of them having been circulated in full or as abstracts. Short accounts of the papers were given as introductions to the valuable discussions which followed.

G. B. Böhnecke: "Some Results of the Hydrographic Investigations in the South-Western North Sea in the 'Gauss' during February and March 1952."

J. Krey: "Seston Acid Albumen Investigations."

A. Bückmann: "Fish Fry and large Invertebrate Plankton Forms."

J. Smed: "On the Homogeneity of the Water Column in the Southern North Sea."

R. E. Craig and T. Lovegrove: "A Hydrographic and Plankton Survey of the east coast of Scotland."

R. E. Craig: "An Underwater Camera using Electronic Flash."

B. Havinga: "Sole; Research Work in the Netherlands (by Boerema and Stamm)."

R. S. Wimpenny: "On the Drift of Plaice Larvae in the Southern Bight in 1952."

Relative to the work of the Comparative Fishing Sub-Committee, papers by Mr. A. R. Margetts, on "The escape of fish from different parts of a trawl", and by Mr. B. B. Parrish and Mr. R. Ellis, on "The seine-net whilst fishing", were on the table and taken as read. Notice was taken of 2 underwater films, "The trawl in action" (from Lowestoft) and "The seine-net whilst fishing" (from Aberdeen) which would be shown at the General Meeting on Saturday, 4. October.

Dr. C. E. Lucas re-elected Chairman.

II. Programme of Work.

Advance programmes for scientific work during 1953 were presented on behalf of Norway, England, Holland, Sweden, and Scotland; it is hoped that similar programmes from other countries will be available later.

Transition Area Sub-Committee.

Chairman: Dr. Erik M. Poulsen.

I. Proceedings.

The Chairman opened the meeting by welcoming the members especially those from The Federal Republic of Western Germany now taking part in the meeting for the first time since the outbreak of the war.

1. The administrative report and the reports to the *Annales Biologiques* were considered and adopted.

2) Communications on work carried out during the year were delivered by various members, the results being compared and discussed.

3) The following papers were read and discussed:—

a) Alf Dannevig: "On Causes of Fluctuations in the Stock of Cod and other Gadoid Fishes."

b) Aage J. C. Jensen: "Prognosis of the Yield of the Fisheries on the basis of investigations of the 0-group of flatfish inshore."

c) A. R. Molander: "Preliminary Results of Experiments on the influence of temperature on the Meristic Characters of the Plaice."

d) Aage J. C. Jensen: "On the Effect of the Waste-Fish Fishery upon the yield of the commercial fishery."

4. The Chairman presented to the Sub-Committee some problems raised by the Consultative Committee during its meeting on 29. September. The problems were considered and the following decisions taken:—

a) It is desired that next year's scientific meeting should deal with the cod.

b) It should be considered whether to have a meeting perhaps in connexion with next year's General Meeting, dealing with the variations of the meristic characters of fish, both on variations called forth by experiments and variations occurring in nature.

c) The scheme for the arrangement of the material for the *Annales Biologiques* now in force is considered appropriate, and the way in which the Editor is complying to this scheme is thought satisfactory.

d) As the question of seaweed and its utilization might be referred to the international "Union of

Biological Sciences" it is not considered necessary for the Council to deal with this question.

5. The Chairman announced that he had accepted the post of Executive Secretary to the International Commission for the Northwest Atlantic Fisheries and could not therefore continue to serve as Chairman (or as a member) of the Transition Area Sub-Committee. He thanked members for their help and support during his years of office.

Dr. Molander, seconded by Dr. Jensen, moved a vote of thanks to Dr. Poulsen for his service to the Sub-Committee which was unanimously approved.

6. Dr. Aage J. C. Jensen elected Chairman.

II. Programme of Work.

The programme of the previous year was re-adopted, however,

a) owing to the fact that German experts are now taking part in the work, the members of the Sub-Committee should undertake a revision of the whole programme at the next meeting.

b) on account of the ever increasing fishery for processing, the effect of this fishery upon the stock of commercial fishes should be closely studied in order that regulations for this fishery may be introduced if necessary.

Baltic Area Sub-Committee.

Chairman: Dr. Chr. Hessle.

I. Proceedings.

1. The following reports were presented and discussed:—
   a) Professor R. Jurva: "The Variations of the largest Yearly Freezing in the Baltic and the Fluctuation in the Length of the Ice Winters since the eighties."
   b) Professor E. Halme: "Quantitative Classification of the Stock of Fish in the sea off Helsinki.
   c) Dr. S. Segerstråle: "Complementary Notes on the Increase in the Salinity off the coast of Finland and its Influence upon the Fauna."
   d) Dr. G. Alm: "Swedish Investigations on the Stock of Salmon and the Salmon Fishery during recent years."
2. The stock of fish and the regulation of the fishery in the southern part of the Baltic were discussed. In this connection Dr. Aage J. C. Jensen reported on Danish market measurements of the plaice in Bornholm, and on the fishery and stock of cod in the Baltic. It was agreed that more attention should be paid to the problems of the fluctuations of the fish stock and the fishery in this district.
3. The Sub-Committee considered the following questions raised by the Consultative Committee:—
   a) As regards the *Annales Biologiques* the Sub-Committee was of the opinion that the principles laid down for the scope of that publication had been adhered to and that they should remain in force.
   b) As seaweed plays a very inconsiderable part in the economy of the Baltic the Sub-Committee refrained from expressing an opinion on the question whether seaweed investigations should be discussed at the meetings of the Council.
   c) Regarding the question of a special scientific meeting next year the Sub-Committee was of the opinion that the subject should be the cod.
4. Dr. Chr. Hessle re-elected Chairman.

II. Programme of Work.

It was agreed to re-adopt this year's programme as that of the coming year.

Atlantic Committee.

Prof. L. Fage in the Chair.

I. Proceedings.

1. In the absence of the Chairman, Prof. J. le Gall, Professor Fage was asked to take the Chair.

2. The administrative report was adopted. As regards the *Annales Biologiques* it was agreed by unanimous consent to continue on the general lines as laid down by Professor Hjort.

The members of the Atlantic Committee stressed the general importance of M. Bellón's work on *Neothunnus albacora* and expressed the wish that the Council should undertake the publication of this excellent paper in French[1]).

3. The general questions relating to the investigations on clupeids, tunnies, and gadoids were discussed. The long-term programme prepared by M. le Gall was adopted.

[1]) See Recommendation 4a of the Consultative Committee.

A communication on the fisheries at Saint-Pierre and Miquelon was made by Dr. ANCELLIN and another on the sardine of Algeria by Dr. DIEUZEIDE.

4. Hake colloquium. The following notes were presented:—

E. POSTEL: "The Black Hake (*Merluccius senegalensis* CADENAT)."

P. DE FRANCA: "Comparative Study of some morphological and biometrical Properties of *M. merluccius* L. and *M. senegalensis* CADENAT."

CL. MAURIN: "Comparative Study of the White Hake (*M. merluccius* L.) and the Black Hake (*M. senegalensis* CADENAT)."

R. LETACONNOUX: "Note on the Mediterranean Hake."

B. B. RAE: "A preliminary Note on the Scottish Hake Fishery."

Prof. LELOUP reported on the statistical results obtained in Belgium.

M. LETACONNOUX was charged by the Committee to prepare a combined report on this important question.

5. Professor J. LE GALL re-elected Chairman.

European Atlantic Slope Sub-Committee.

Chairman: Dr. A. DE M. RAMALHO.

I. Proceedings.

1. The following communications were made:—

F. FRADE: "Summary of the Results of the biological Investigations in Sea Water and Brackish Water of Portuguese Guinea since 1945."

F. LOZANO: "Work on 'Mar Chica' (Melilla)."

C. F. HICKLING: "The West African Fisheries Research Institute." (Freetown, Sierra Leone.)

E. POSTEL: "Hydrographical Observations off Dakar."

E. POSTEL: "The Bionomic Aspect of the Coasts of Senegal."

E. POSTEL; "Contribution to the Study of the Tunnies of the Tropical Atlantic."

R. COUPÉ: "Fourth Note on the Sparidae of the Moroccan Coast (*Pagellus erythrinus* LINNÉ and *P. bogaraveo* BRÜNNICH)."

J. FURNESTIN: "The Shad of El Kansera, a case of complete Adaptation to Fresh Water by an Anadromous Species."

2. Dr. J. FURNESTIN re-elected Chairman.

II. Programme of Work.

The work planned in 1951 was reviewed. In view of the great amount of investigations to be executed the members who attended the meeting of the Sub-Committee expressed the wish that the experts working in Africa should meet at regular intervals in order to prepare plans for common research and to determine common working technique.

These meetings, like those at Biarritz for the study of clupeids and at Málaga for that of tunnies, should be held in an African town, under the ICES, and more especially the African Sub-Committee, but at the expense of the participating states only.

African Atlantic Slope Sub-Committee.

Chairman: Dr. J. FURNESTIN.

I. Proceedings.

1. Communications.

J. LE GALL: "Tunny Investigations."

B. ANDREU, E. ANADON, P. ARTÉ, and R. TOLL (Spain): "On the Correlation between the Vertebral Mean and the Size of 0-Group Sardines."

P. DESBROSSES (France): "Observations carried out in May 1951 in Newfoundland Waters onboard the 'Président Théodore Tissier'."

F. LOZANO (Spain): "The Horse Mackerel"

2. Dr. J. CUESTA elected Chairman.

Pelagic Committee.

In the Chair: Mr. Árni Friðriksson.

The Chairman opened the meeting and the following papers were read and discussed:—

1. Mr. O. Åsen: "The Icelandic-Norwegian Herring Tagging Experiment illustrated by the author's film on herring tagging."
2. Dr. Aage J. C. Jensen: "The Danish Markings of Herring."
3. Mr. G. McPherson: "Scottish Herring Tagging Experiments."
4. Mr. Á. Friðriksson: The north-coast Herring of Iceland in 1952."
5. Dr. J. Ancellin: "Herring from the southern North Sea and the eastern part of the Channel, 1951—52."
6. Mr. O. Åsen: "The Maturity-Cycle in Spring Spawning Herring."
7. Dr. J. Ancellin: "The Fishery's Influence upon the Stock of Herring (southern North Sea and the eastern part of the Channel)."
8. Mr. B. B. Parrish and Mr. R. E. Craig: "The Scottish Programme of Herring Hydrography."

Herring Sub-Committee.

Chairman: Mr. Árni Friðriksson.

I. Proceedings.

Contributions were made by Mr. F. Devold, Dr. E. Bertelsen, Mr. O. Stefánsson (read by the Chairman), and Dr. K. A. Andersson on the investigations carried out during 1951—1952 in the respective countries. During the ensuing discussion a summary was given by the Committee members from the other countries. A number of contributions concerning herring investigations were postponed to be treated in the Pelagic Committee.

With regard to the note, submitted to the Sub-Committee by the Consultative Committee, from M. le Gall, "L'esprit des Annales Biologiques", agreement was expressed with the principles laid down when the *Annales Biologiques* were founded.

Mr. Árni Friðriksson re-elected Chairman.

II. Programme of Work.

1. It was decided to conform to a common plan in searching for herring and to carry out hydrographic work on the Atlantic-Scandian herring in May and June in 1953. The investigations are to be continued as in 1952.
2. The desirability of another set of cruises in August was recognized and the Chairman was asked to contact the members for this purpose by correspondence.
3. The Chairman and Dr. Tåning were asked to consider by correspondence an international co-operation of research on the stocks of herring in the southern North Sea by the countries especially interested.
4. Herring investigations in general, tagging included, will be continued and, if possible, extended.

III. Recommendations.

1. The Herring Sub-Committee does not consider it necessary to establish a special Sub-Committee, as proposed by the Hydrographical-Biological Sub-Committee; they are, however, in favour of extending collections of plankton on the cruises as planned.[1])
2. The Herring Sub-Committee recommends that provisions should be made for attendance by seaweed experts from all member countries from time to time at the meetings of Council.[2])
3. The Herring Sub-Committee recommends that provisions be made for contributions on fish detection (acoustically and optically) to be read at the next meeting of Council before the Pelagic Committee.[3])
4. The Herring Sub-Committee supports the recommendation put forward by the North-Western Area Sub-Committee that hydrographic material from the herring cruises in the Norwegian Sea be published.[4])

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[1]) The relevant recommendation of the Hydrographical Committee was withdrawn by the Committee's Chairman.

[2]) The Consultative Committee was agreed that no action should be taken at present (see Cons. Ctee's report I, 5).

[3]) Accepted by the Consultative Committee, see report I, 3 b.

[4]) Accepted by the Consultative Committee under the form of Recommendation 3.

The Salmon and Trout Committee.

Chairman: Mr. Sven Sømme.

I. Proceedings.

The Chairman wished the members and guests welcome. The list of members was checked.

Reports of salmon tagging and marking results for 1952 were delivered by Dr. Went, Ireland, Mr. Pentelow, England, M. Vivier, France, Mr. Macfarlane on behalf of Mr. Pyefinch for Scotland, Dr. Carlin, Sweden, and Mr. Sømme, Norway.

Mr. Sømme summarized some general results from the two 3-year periods of the international tagging and marking co-operation. This raised some discussion.

Mr. K. Larsen read a report of the sea trout research in Denmark in recent years.

Mr. J. Knudsen gave a report of the Danish salmon fisheries in the Baltic and an analysis of the catch in size-groups. Dr. G. Alm supplied information from the Swedish salmon fisheries. It appears that the stock of salmon in the Baltic is now decreasing and Dr. Alm indicated the possible necessity of protection measures.

Mr. Sømme informed the Committee that he had resigned from his post as Inspector of Salmon and Freshwater Fisheries for Norway and was no more officially connected with the research work. He resigned his membership in the Committee.

Dr. A. E. J. Went elected Chairman.

II. Programme of Work.

The Committee agreed that the salmon tagging programme, as laid down at previous meetings, should be continued and it was left to the participating countries to arrange their own research programme within the framework of the agreed plan.

III. Recommendation.

The Committee wishes to express its appreciation of the valuable work on salmon tagging done along the northern coast of Ireland and asks the Council in conveying its appreciation to the appropriate authority to also express the hope that these experiments may be continued and extended.

Shellfish Committee.

Chairman: Dr. B. Havinga.

I. Proceedings.

The Chairman welcomed the members of the Committee and the visitors, especially those who had come from the other side of the Atlantic.

Advance copies of the *Annales Biologiques* and the administrative report were on the table. They were approved.

The Chairman drew the attention of the members to a note from M. le Gall "l'Esprit des Annales Biologiques". The Committee agreed on the principles that were laid down when the *Annales Biologiques* were founded.

An extract was received of a letter from Mr. J. E. de Watteville on Seaweed Research. The Committee expressed their opinion that the Council should be closely interested in seaweed research, and that the Council might consider the provision from time to time of facilities for discussion.

The Chairman drew the attention of the Committee to a meeting of a "Commission des étangs salés et limans" to be held from 20 to 25 October 1952 organized by "La Commission Internationale pour l'Exploration Scientifique de la Mer Méditerranée".

Crustacea.

The following contributions were received:—

Mr. Ch. Gilis: "The Shrimp Fishery at the Belgian Coast; its development during the years 1935—1951 and its influence on the shrimp stock."

Dr. H. A. Cole and Mr. N. Mistakidis: "A Device for the quick and accurate Measurement of Carapace Length in Prawns."

Dr. H. A. Cole: "Conservation Measures for Lobster Stocks."

A discussion followed on the influence of the fishing on the stock of shrimps. The Committee expressed their wish that prawns should be measured from the base of the eye-notch to the posterior mid-dorsal edge of the carapace.

A review was given on protective measures for lobsters in force in the countries concerned. Dr. A. W. Needler gave a survey of the situation in Canada.

Mollusca.

Mr. F. A. Gibson read a paper on growth and development of the escallops in Irish waters.

Marine Cultures.

The Chairman gave a short review of the correspondence with F.A.O. on co-operation with experts in other parts of the world. It was decided that no further activity should be undertaken until the Directory of Institutes prepared by F.A.O. is ready.

The following contributions were received:—

Dr. P. Korringa: "Combating Fouling Organisms in the Zealand Oyster Industry."

Mr. Ladouce: "The actual position of *Mytilicola intestinalis*."
Dr. P. Korringa: "Epidemiological Observations on *Mytilicola intestinalis* in Zealand Waters."
Mme M. Couteaux-Bargeton: "Investigations on *Mytilicola intestinalis*."
Dr. Havinga re-elected Chairman.

II. Programme of Work.

Investigations on the influence of the fishery on the stock of shrimps will be continued. The programme of work on *Mytilicola* as established in Paris 1951 is still standing. The Chairman was charged with collecting data for composing a chart for the distribution of *Mytilicola*.

Hydrographical Committee.

Chairman: Prof. H. U. Sverdrup.

I. Proceedings.

The list of members was revised.

The administrative report for 1951 was approved. Plans for hydrographic work at sea in 1953 were discussed.

Dr. Tait reported on the work of the Sub-Committee for Organization of Hydrographical-Biological Investigations and its Recommendations 1 and 2 were supported.[1])

Lt.Cdr. Lumby presented a Memorandum on Synoptic Hydrographic Charts. Recommendation 1 was carried.

M. P. Tchernia reported on the oceanographical work carried out by the French Navy in the period 1948—1952. The Committee complimented the Hydrographic Service of the French Navy on the publication of the *Bulletin d'Information*.

Dr. Carruthers reported on the work of the Sub-Committee for Promoting Measurements of Currents in all their Aspects. Recommendation 2 was carried. In connection with this the following expressions were unanimously adopted:

"The Hydrographical Committee attaches the greatest importance to the action of the various national oceanographical organizations which, although not actually engaged in fishery investigations, still collect observations regarding sea water and its movements of great interest to the International Council for the Exploration of the Sea. The Committee expresses its strong hope that the work carried out on the currents of the North Sea—on the English side under the direction of the British Admiralty and the National Oceanographic Institute, on the German side by the Hydrographical Institute of Hamburg—may be continued and extended. The Committee hopes that it will be the same with the oceanographical work carried out by the Meteorological Service of Holland, the French Navy, the Maritime Service of the French Ministry for public works, and the Belgian Naval Force."

The Hydrographer presented lists and charts containing information on routine sampling carried out regularly along fixed lines or at fixed stations by research and commercial vessels, lightships etc. It was decided that in future dated amendments to these lists should be distributed.

The Hydrographer reported on the work carried out by the Service Hydrographique of the Council in the past year.

The Committee wished to put on record its great satisfaction with the manner in which the work of the Service Hydrographique was being conducted.

The Chairman asked the members to send their hydrographical data to the Service Hydrographique with as short delay as possible.

The desirability of including in the Bulletin data already published elsewhere was discussed. It was decided that subject to considerations of the cost of reproduction hydrographical data which refer to any part of the region covered by the Council's activities and which may be published elsewhere, should also be published in the Council's *Bulletin Hydrographique*. If the data are not published in the Bulletin the appropriate references should be entered in it.

The following lectures were given:—

Miss E. Lisitzin: "The Variations of the Sea Level in the Baltic."
F. Koroleff: "A Method for determining Calcium in Sea Water and Bottom Sediments."
N. Jerlov: "Influence of suspended and dissolved Matter on the Transparency of Sea Water."

Messrs. Groen, Craig, Oppenheimer and Russell took part in the discussion.

B. Kullenberg: "Exchange of Water through the Strait of Gibraltar."

Dr. Carruthers and the Chairman took part in the discussion.

The Chairman initiated a discussion on the relation between the hydrographical and the biological work and on the collaboration between biologists and hydrographers. He stressed the importance of simple representation of hydrographical results in committees concerned with aspects of biological work. Messrs. Wimpenny, Carruthers, Lumby, Lucas, Böhnecke and the Chairman took part in the discussion.

Prof. Sverdrup re-elected Chairman.

[1]) Recommendation 2 was later withdrawn by the Chairman of the Hydrographical Committee as it was not supported by the Herring Sub-Committee.

II. Recommendations.

1. It was recommended (a) that production and publication of the hydrographic synoptic charts, now carried out by the Fisheries Laboratory, Lowestoft, should be undertaken by the Service Hydrographique, from 1st November 1952, and (b) that participating countries should be entitled to receive a limited number of sets gratis, a charge being made for any additional sets required by these countries and also for sets required by institutions in non-participating countries.

2. It was recommended that the Sub-Committee for Promoting Measurements of Currents in all their Aspects should continue for another year but under the name "The Sub-Committee for Procuring Regular Currents Data".

Sub-Committee for Organization of Combined Hydrographical-Biological Investigations.

Chairman: Dr. J. B. Tait.

I. Proceedings.

The following matters were considered:—

a) The reports upon the investigations undertaken by the Sub-Committee in the years 1947—1949 incl., and

b) the question of the continuation of the Sub-Committee.

The Chairman explained that in his responsibility for reporting upon the hydrographical investigations in the Faroe-Shetland Channel in the above years an adequate account of the hydrography of this region depended upon the inclusion of investigations in previous years. Such a more comprehensive report embracing the years from 1927 is in preparation for publication.

Dr. Eggvin stated that he found a similar difficulty in respect of the North Sea part of the proposed report on the Sub-Committee's investigations. He, therefore, proposed to include work carried out in a number of years before 1939. His report will be completed as soon as circumstances permit.

On the question of continuation of the Sub-Committee the Chairman asked for proposals regarding conjoint investigations which were not already sponsored by one or more of the existing committees and which could appropriately be dealt with by the present Sub-Committee. After discussion it was agreed that a proposal put forward by Professor Braarud which forms the subject of the Recommendation 1 below did not necessitate the continuation of the Sub-Committee. There were no other proposals.

II. Recommendations.

The Sub-Committee recommended:

1. That the following suggestion be laid first before the Herring Sub-Committee, and finally before the Northern Seas Committee:—

   That an *ad hoc* Sub-Committee be constituted to co-ordinate hydrographical-biological investigations with particular reference to plankton, in the Norwegian and Barents Seas, and that in addition to other names which may be proposed by these Committees the suggested *ad hoc* Sub-Committee should include Prof. Braarud, Mag. Grøntved, Mag. Wiborg, Dr. Eggvin, Lt.Cdr. Lumby and Dr. Tait[1]).

2. That the Sub-Committee for Organization of Combined Hydrographical-Biological Investigations should be dissolved.

[1]) The recommendation was supported by the Hydrographical Committee, but later withdrawn by its Chairman as it was not supported by the Herring Sub-Committee.

Plankton Committee.

Chairman: Prof. T. Braarud.

I. Proceedings.

The Chairman referred to the great loss suffered by plankton workers through the death of Dr. P. Jespersen, and the Committee paid a tribute to his memory.

The following papers were read:—

E. Steemann Nielsen (Copenhagen): "The Production of Organic Matter in the Oceans." (Results from the "Galathea" Expedition).

P. Haller-Nielsen (Oslo): "The Annual Phytoplankton Cycle at the Weather Ship Position 'M' in the Norwegian Sea."

O. J. Østvedt (Oslo): "Annual Vertical Migration in Copepods. (Observations from the Weather Ship Position 'M' in the Norwegian Sea.)"

H. U. Sverdrup Oslo): "On Conditions for Vernal Bloom of Phytoplankton."

D. H. Cushing (Lowestoft): "Plankton as the Foundation of a Fishery."

K. M. Rae (Edinburgh): "The Plankton Recorder Results and their Relation to Hydrography."

Kr. Fr. Wiborg (Bergen): "Quantitative Variations of the Volumes of Zooplankton samples at position 'M' in the Norwegian Sea and in Norwegian coastal waters, during 1949/51."

T. Braarud (Oslo): "Plankton Studies by means of the Electron Microscope."

Mr. F. S. Russell reported on the present situation regarding the preparation of Plankton Sheets, and the recommendation below was adopted.

The question whether the International Council might include investigations of the utilization of seaweeds in its sphere of interest was discussed. No definite recommendations were made.

Professor T. Braarud re-elected Chairman.

II. Recommendation.

The following recommendation was made by the Committee:— It is necessary to appoint an editor of the *Plankton Identification Sheets* in place of the late Dr. Poul Jespersen. It is preferable that this editor be living in Copenhagen so as to be on the spot to advise regarding scientific details. He should be a zoologist. The Committee recommended that Dr. Gunnar Thorson, of the University of Copenhagen, be invited to become Editor. They have especially selected Dr. Thorson because it is hoped that Identification Sheets of larval stages may be produced in the future.

Statistical Committee.

Chairman: Dr. Nils Rosén.

I. Proceedings.

The *Bulletin Statistique* for 1948 and 1949 were laid before the Committee. No remarks.

The Chairman said that most of the material for *Bulletin Statistique* for 1950 had been received and it is hoped that the missing material will soon be delivered.

Dr. Rosén gave a short report on FAO's Fisheries Statistics Meeting held in Copenhagen in May 1952.

Dr. Nils Rosén re-elected Chairman.

II. Recommendation.

The member countries should be asked for the conversion factor used when giving the statistical figures as round fresh fish and reminded of the importance of statistics regarding fishing effort.

VERSION FRANÇAISE

RÉUNION SCIENTIFIQUE SPÉCIALE

Réunion Générale.

Le Dr. C. E. Lucas préside.

Les contributions suivantes sont présentées et discutées:

J. R. Lumby: "Note sur les cartes d'hydrographie."[1])
J. Eggvin: "Contribution sur l'océanographie de la Mer de Norvège."[2])
M. Fontaine: "La fonction hypophyso-thyroidienne des poissons dans ses rapports avec leur morphologie et leur comportement."[3])
Films. Le chalut en action (Lowestoft). La seine-tournante en action (Aberdeen).
R. J. H. Beverton: "Quelques observations sur les principes et méthodes des règlements de pêche."[3])

[1]) Doit être publié dans un numéro prochain du Journ. du Conseil.
[2]) Doit être publié dans un volume prochain de la série des Rapp. et Proc.-Verb.
[3]) Doit être publié dans le Journ. du Conseil XIX, 1.

RAPPORTS

Rapport et Recommandations du Comité Consultatif.

Président: M. R. S. Wimpenny.

I. Compte-rendu.

1. M. Graham, l'ancien Président, ayant démissionné pour cause de mauvaise santé, le Président du Conseil International ouvre la séance. M. Wimpenny est élu Président du Comité.

En l'absence de M. le Gall, malade, le Professeur Fage est agréé pour présider à sa place la séance du Comité Atlantique; de même le Dr. Lucas présidera la Réunion Générale.

2. Organisation du travail du Comité.

L'enquête du Professeur Sverdrup sur la mise à la disposition pour chacun des membres du Comité des programmes détaillés des différentes contributions, fait ressortir que les travaux sont arrivés si en retard qu'une liste provisoire n'a pu être établie que la veille. Le Professeur Sverdrup insiste fortement sur l'importance de recevoir en temps voulu les documents. Pendant le seconde séance, pour donner suite aux suggestions des Prof. Sverdrup et Braarud et du Président, il est décidé d'essayer de fixer une date limite de réception des rapports soumis aux Comités. On pourra alors préparer des collections réunissant une copie de chaque article avec une table des matières complète, pour chacun des membres du Comité, pour les invités et les non membres. Ces collections seront gardées à un Centre général de distribution.

3. Organisation des réunions de 1953.

a) M. Rollefsen suggère qu'une réunion générale de la Morue soit tenue en 1953. Cette suggestion est retenue et passée aux comités intéressés pour avis, afin que la décision finale puisse être prise au cours de la dernière réunion du Comité Consultatif. La Recommandation No. 2 est alors acceptée.

b) M. Fridriksson signale l'importance qu'il y aurait à réserver un entretien sur les écho-sondeurs et l'Asdic; le principe est accepté et la discussion aura lieu pendant la réunion du Comité Pélagique.

4. Publications.

a) M. Desbrosses lit une lettre de M. le Gall (App. 1) sur le but des *Annales Biologiques*. On demande aux membres d'examiner la question au sein de leurs comités respectifs. Pendant la seconde séance, la discussion aboutit à l'accord suivant: il n'y a pas lieu de modifier le but déjà défini des Annales.

Le 31 Octobre est accepté comme date limite pour soumettre les amendements aux épreuves du Volume VIII distribuées pendant le meeting.

b) Le Dr. Å. Vedel Tåning donnera son avis au Secrétaire Général au sujet du travail biologique du Conseil et, plus particulièrement, en ce qui concerne les *Annales Biologiques* et les *Rapports et Procès-Verbaux*. La question d'un biologiste consultant sera discutée à la réunion de l'année prochaine.

c) La position du Secrétaire Général quant à la définition de la tâche définie dans les Statuts est discutée. Il est décidé qu'il est formellement responsable du travail de biologie, d'hydrographie et de routine du Conseil, mais que le terme "conduct" du paragraphe 2 de la définition de ses charges n'est pas approprié. Le Bureau recherchera un substitut à ce mot pour soumettre à bon escient un amendement aux Statuts.

d) L'augmentation du tarif pour les articles paraissant dans le *Journal du Conseil* est recommandée, ainsi qu'il a été fait pour les analyses de publications ("reviews").

5. Rapport avec les autres organisations.

Une lettre de M. de Watteville (App. 2) sur la position des études internationales sur les algues est présentée au cours de la première réunion. Il est demandé aux Présidents de Comité de s'informer des opinions de leurs membres à ce sujet. Comme un symposium général est déjà fixé pour dans trois ans en Norvège, il est décidé (à la seconde séance) qu'il n'y a actuellement aucune nécessité pour le Conseil d'offrir des facilités spéciales et que si rien n'est entrepris maintenant, le Conseil se réserve d'examiner la question sans parti pris si le besoin s'en fait sentir.

6. Rapports généraux des Comités.

a) Les rapports des Comités et Sous-Comités sont examinés et approuvés à la seconde séance. Les résultats des élections au sein des Comités ont désigné: le Dr. Jensen, le Dr. Cuesta, et le Dr. Went (à la place des Dr. Poulsen, Dr. Ramalho et Mr. Sømme). Le Président remercie les présidents sortants de leurs services et accueille les nouveaux élus. Les Recommandations 1—5 sont adoptées et les remarques et suggestions additionnelles suivantes sont faites:

b) La nomination des Présidents lors de la prochaine session pour les Comités des Mers Nordiques, de l'Atlantique et de la Vie Pélagique, est discutée et le Dr. Lucas, le Prof. le Gall et Mr. Friðriksson sont respectivement nommés.

c) Le Professeur Sverdrup retire la Recommandation 2 du Comité Hydrographique, puisqu'elle n'est pas soutenue par le Sous-Comité du Hareng.

d) La haute qualité des articles présentés aux réunions des Comités et à la Réunion Générale, est remarquée et il est décidé de faire imprimer les articles présentés aux réunions du Conseil dans les publications du Conseil, s'ils sont proposés. Les Présidents des Comités demanderont les articles offerts. Pour ceux qui ne le seront pas, ils demanderont une copie qui sera déposée aux archives du Conseil; les détails appropriés seront communiqués de temps en temps aux Gouvernements membres.

7. Conclusions.

a) Le Président du Conseil fait une courte allocution pendant la réunion et signale une légère amélioration des finances du Conseil.

b) Le Président du Comité remercie les membres présents pour leur coopération et souhaite au Dr. Poulsen un succès dans sa nouvelle situation avec l'ICNAF.

II. Recommandations.

1. Rapports généraux des Comités.

Les rapports des Comités et Sous-Comités sont approuvés et les propositions suivantes sont acceptées en plus de celles exposées séparément plus loin:

a) Sous-Comité du Hareng: Experts algologues (Rec. 2) (voir I, 5 ci-dessus) et contributions à la détection des poissons (Rec. 3) (voir I, 3 b ci-dessus).

b) Comité Hydrographique: Maintien d'un "Sous-Comité des Données Régulières sur les Courants" (Rec. 2).

c) Sous-Comité Hydro-Biologique: Dissolution de ce Sous-Comité.

d) Comité des Statistiques: Données statistiques.

2. Réunion Scientifique Spéciale de 1953.

Il est décidé que "La Morue" sera le sujet d'une Réunion Scientifique Spéciale pendant la prochaine réunion du Conseil. Mr. Rollefsen accepte d'en être le Président avec l'aide du Dr. Paul M. Hansen comme Rapporteur.

3. Réunion intermédiaire.

Pour se servir des observations hydrographiques faites d'après le programme combiné dans la Mer de Norvège, il sera organisé une réunion des hydrographes et autres personnes intéressées à Bergen en Février 1953. Le Professeur Sverdrup se mettra en rapport avec le Dr. Tåning et M. Rollefsen pour convenir de la réunion et décider de sa composition. La réunion ne comportera pas plus de 6 personnes et ne durera pas plus de 7 jours; les dépenses seront supportées par le Conseil.

4. Publications.

a) Les frais d'impression du travail d'environ 300 pages du Dr. Luis Bellón sur *Neothunnus albacora* seront partiellement payés par le Conseil. Un devis détaillé n'étant pas disponible, le prix sera estimé en deux chapitres: (i) prix de revient — (ii) prix des

réimpressions. Ces devis seront envoyés au Secrétaire Général pour être examinés à la réunion de Mai du Bureau.

b) Il est adopté que l'établissement et la publication des cartes hydrographiques synoptiques actuellement confiés au laboratoire des pêches à Lowestoft soient pris à la charge du Service Hydrographique à partir du 1er Novembre 1952.

Il est convenu de donner gratuitement aux Etats membres un nombre limité de publications. Les publications supplémentaires réclamées, ainsi que celles demandées par les institutions des Pays non participants seront facturées.

Il est décidé que l'Hydrographe du Conseil ira à Lowestoft pour se charger de l'établissement des cartes.

c) Il est décidé de désigner le co-éditeur des *Fiches d'Identification du Zooplancton* aux lieu et place du regretté Dr. P. Jespersen et d'inviter le Dr. Gunnar Thorson de l'Université de Copenhague à prendre ce poste avec le traitement actuel.

5. Coopération internationale.

Le Comité sanctionne l'avis du Comité de la Truite et du Saumon d'envoyer une lettre au Gouvernement de l'Irlande du Nord exprimant la satisfaction du Conseil pour le travail appréciable fait sur le marquage du saumon le long de la côte nord de l'Irlande avec l'espoir que ces expériences soient poursuivies et étendues.

APPENDICE 1

Note par M. Jean le Gall: L'Esprit des Annales Biologiques.

Si j'ai bien compris l'esprit des *Annales Biologiques*, tel qu'il a été défini par le Prof. J. Hjort (Ann. Biol. Vol. I, 1943, p. 9) "Réunir tous les résultats d'importance, obtenus par l'examen des fluctuations dans la faune marine, de leurs conditions d'existance et de leurs modifications, dans une publication pour laquelle on adoptera le nom d'*Annales Biologiques*';" ces résultats ne doivent pas se limiter aux variations de la température et de la salinité et aux statistiques biométriques concernant les espèces marines comestibles; travaux qui sont devenus maintenant d'une routine courante: mais, également faire état des observations faites sur les fluctuations de la faune et de la flore marine industrielles (apparitions d'espèces nouvelles dans un secteur, description d'espèces comestibles mal connues etc.) et, également les interréactions du milieu externe avec le milieu interne (ex. travaux de Fontaine). Ceci sous une réserve: que le travail soit un exposé des méthodes employées, des résultats obtenus et des conclusions envisagées et résumé (pour prendre date) en deux pages au maximum, exceptionnellement en trois, si la valeur du document le demande.

APPENDICE 2

Extrait d'une lettre de M. J. E. de Watteville sur les recherches d'algologie marine.

L'Institut des Recherches d'Algologie Marine, dont les quartiers généraux sont à Inveresk, Midlothian, a attiré l'attention des Départements des Pêches de Grande-Bretagne sur le fait que l'on poursuit dans quelques pays des recherches se rapportant à l'utilisation et à la mise en valeur des algues marines. L'Institut a suggéré qu'il serait très avantageux de créer un forum international où l'on discuterait des résultats de ces recherches, où on les comparerait et si possible les coordonnerait.

Un Symposium International d'Algues Marines s'est tenu à Edimbourg, sous les auspices de l'Institut, en Juillet de cette année. Ce Symposium attira environ 160 représentants et de nombreuses contributions de 30 pays et colonies. La Conférence décida de tenir un meeting international similaire en Norvège dans trois ans, dont la responsabilité de l'organisation serait prise par l'Institut Norvégien des Recherches d'Algologie Marine d'Oslo.

Il parut aux Départements que les recherches d'Algologie marine s'étendant au-delà du champ d'action du Conseil International, le sujet est un de ceux qui intéresserait directement le Conseil qui pourrait prévoir de temps en temps des facilités de discussions.

Rapports et Programmes des Comités et des Sous-Comités.

Comité des Mers Nordiques.

M. G. Rollefsen préside.

Les études suivantes sont présentées et discutées:

1. H. Mosby: "L'eau du fond à la Station 'M' des navires météorologiques."
2. J. B. Tait: "L'évaluation quantitative du Courant Atlantique dans le canal Féroë-Shetland."
3. F. Devold: "Résultats préliminaires des croisières du 'G. O. Sars' en 1952 dans la Mer de Norvège."
4. G. Rollefsen: "La sélectivité de différents engins de pêche employés aux Lofoten."
5. G. Dannevig: "Expériences de marquages sur les bancs de Lofoten de 1947 à 1952."
6. G. Trout: "Marquages anglais de morues en Mer de Barentz." Note présentée par R. J. Beverton.

Sous-Comité du Secteur Nord-Est.

Président: M. G. Rollefsen.

I. Compte-rendu.

1. Les membres présentent de brefs rapports sur les recherches faites dans le secteur en 1952, et les recherches particulières et travaux de routine prévus pour 1953. Un débat a lieu pour déterminer à quels problèmes sera vraisemblablement accordée la priorité en 1953.

2. Deux lettres soumises aux membres par le Comité Consultatif, sont discutées. En ce qui concerne la lettre de M. le Gall, "L'Esprit des Annales Biologiques", le Sous-Comité se sent incapable d'exprimer son opinion sur la question soulevée, manquant d'information concernant les raisons de la position adoptée. Quant à la lettre de M. de Watteville sur la question des algues, à savoir si les algues peuvent faire partie des questions intéressant le Conseil, le Sous-Comité pense qu'une telle décision doit dépendre de la possibilité qu'elle a d'être acceptée par un sous-comité spécial des algues.

3. M. G. Rollefsen est réélu Président.

II. Programme de Travail.

a) Le Danemark enverra probablement en 1953 encore un petit bateau en Mer de Barentz, pour entreprendre des essais de marquage sur la plie.
b) L'Angleterre continuera le travail dans la Mer de Barentz et le long de la côte Norvégienne, pour étudier la corrélation entre les températures de la mer et les concentrations de morues, les migrations de morues, la dispersion et la distribution des larves de morue. La distribution du capelan et du plancton sera également étudiée.
c) La France a prévu un travail d'hydrographie dans le secteur.
d) L'Allemagne continuera l'échantillonnage de la morue, de l'aiglefin, du lieu-noir et du *Sebastes*, plus spécialement pour l'étude de l'âge et de la distribution de la taille et les études de populations.
e) L'Islande poursuivra le marquage du hareng.
f) La Norvège est prête à effectuer le travail de routine dans les eaux côtières et a projeté des croisières du navire à moteur "G. O. Sars" dans la Mer de Barentz et la Mer de Norvège. Le programme définitif de ces croisières sera donné dans un proche avenir.
g) L'Ecosse a projeté des recherches sur les larves de l'aiglefin qui pourraient être étendues au Secteur Nord-Est.

III. Recommandation.

Le Sous-Comité du Secteur Nord-Est demande qu'une réunion scientifique spéciale de la morue soit tenue à la prochaine Assemblée du Conseil afin de traiter des problèmes de la morue dans tous les secteurs relevant de l'intérêt du Conseil.

Le Sous-Comité propose que M. G. Rollefsen en soit l'organisateur.

Sous-Comité du Secteur Nord-Ouest.

Président: Dr. Å. Vedel Tåning.

I. Compte-rendu.

1. Le Président souhaite la bienvenue aux membres et aux personnes présentes et souligne l'importance de la participation allemande aux travaux. Il fait ensuite une brève récapitulation de l'oeuvre importante effectuée dans le secteur par les différents navires de recherches au cours de l'année et attire l'attention sur les nouveaux laboratoires annexes qui sont déjà ou seront en activité aux îles Féroës et dans l'ouest du Groënland.

La nouvelle liste des membres est approuvée. Le Comité adopte le rapport administratif et le rapport du Comité aux *Annales Biologiques*.

2. Communications. Les contributions suivantes sont lues et discutées:

Árni Friðriksson: "Captures pélagiques de lieu-noirs en 1952 (Islande)."

Paul M. Hansen: "Recherches sur la morue dans les eaux de l'Ouest Groënlandais durant 1952."

F. Hermann: "Conditions hydrographiques sur les bancs de pêches de l'Ouest Groënlandais en 1952."

Jón Jónsson: "Revue du stock islandais de morue et plus spécialement pour 1952."

Birger Rasmussen: "Hydrographie et pêche à la morue dans les eaux de l'Ouest Groënlandais."

Les nouvelles observations pour 1952 seront publiées dans les *Annales Biologiques*.

3. Le Président indique que des matériaux continueront à être rassemblés comme les années précédentes, en vue de compléter la bibliographie sur les "Changements Climatiques".

4. Le Dr. Å. Vedel Tåning est réélu Président.

II. Programme de Travail.

Le programme général adopté en 1949 est examiné. Aucune modification ni amendement n'est proposé.

Les détails du programme à appliquer en 1953 seront conclus par correspondance, les précisions suivantes sont apportées:

Angleterre: deux croisières possibles, aux environs d'Août, par le navire de recherches "Ernest Holt" dans les eaux du Sud Groënlandais, et dont les programmes seront fixés par correspondance.

Belgique: aucun travail en mer dans le secteur en 1953.

Danemark: travaux routiniers habituels dans les eaux des îles Féroës et du Groënland, entre autres, par le "Dana" et le "Adolph Jensen" et récolte de documents d'après les captures commerciales. Continuation des coupes hydro-biologiques de l'Atlantique Nord.

Ecosse: des navires de recherche opèreront dans les eaux des Féroës, d'Islande et du Groënland-Est, comme l'année dernière; le programme exact sera fixé plus tard.

France: le navire de surveillance "Aventure" fera des recherches dans les eaux du Groënland et du Labrador ainsi qu'au large de Rockall si cela est possible.

Hollande: aucun travail en mer en 1953.

Irlande: aucun travail en mer en 1953, dans le secteur.

Islande: travaux de routine habituels en Islande comme les années écoulées, particulièrement sur la morue et le hareng; les croisières du navire de recherche "Maria Julia" ne sont pas encore arrêtées. Des renseignements seront rassemblés d'après les prises commerciales des chalutiers opérant dans les eaux groënlandaises.

Norvège: des documents seront rassemblés d'après les captures des cordiers et des chalutiers opérant dans les eaux du Groënland. Des observations hydrographiques et des marquages de morues seront effectués.

Suède: le navire de recherche "Skagerak" opèrera dans les eaux des Shetlands et de l'ouest de l'Ecosse, comme les années précédentes.

III. Recommandations.

1. Il est décidé de soutenir la recommandation du secteur Nord-Est proposant qu'une réunion sur la morue soit tenue à la prochaine session annuelle.

2. Il est recommandé que les importantes données des observations hydrographiques, dans la Mer de Norvège, rassemblées grâce au travail effectué en coopération pendant ces dernières années, soient étudiées et publiées par le Conseil, dès que possible.[1])

Sous-Comité de la Question des Féroës.

Le Président, Dr. Å. Vedel Tåning, fait le compte-rendu du travail en cours, particulièrement celui entrepris par M. J. S. Joensen au laboratoire annexe de Thorshavn. Sont également discutées les données statistiques disponibles des années d'après-guerre.

Comme le travail sur la question doit vraisemblablement être poursuivi pendant plusieurs années, en accord avec le programme arrêté en 1948 (voir Rapp. et Proc.-Verb. Vol. No. 124 p. 55, Rec. 1) les résultats sur lesquels une proposition peut être établie ne seront à disposition que plus tard. Il est convenu d'étudier à nouveau la question l'année prochaine.

Les membres s'engagent à fournir au Sous-Comité des documents d'intérêt, et particulièrement, des données statistiques des chalutiers anglais et écossais.

La liste révisée des membres est acceptée.

[1]) Accepté par le Comité Consultatif sous la désignation de Rec. 3.

Sous-Comité de la Mer du Nord.

Le Dr. C. E. Lucas préside.

I. Compte-rendu.

Le Président ouvre la séance et souhaite la bienvenue aux différents visiteurs et aux membres du Sous-Comité.

Les membres du Sous-Comité sont en possession d'une note de M. le Gall: "L'esprit des Annales Biologiques", qui leur est soumise par le Comité Consultatif. Il apparaît qu'aucun changement ne s'impose en ce qui concerne les principes actuellement en vigueur et dans le cadre desquels ont été fondées les *Annales Biologiques*.

Des épreuves préliminaires du rapport administratif et des *Annales Biologiques* de 1951 sont à la disposition du Sous-Comité, elles seront soumises aux collaborateurs pour correction.

Communications.

Les notes mentionnées ci-dessous sont présentées au Sous-Comité, la plupart d'entre elles ont été mises en circulation en entier ou sous forme d'extraits. De brefs comptes-rendus de ces notes sont donnés en tant qu'introductions aux importantes discussions qui suivent.

G. B. Böhnecke: "Quelques résultats des travaux hydrographiques effectués dans la partie sud-ouest de la Mer du Nord à bord du 'Gauss' en Février-Mars 1952."

J. Krey: "Recherches sur l'albumine acide de Seston."

A. Bückmann: "Larves de poissons et grandes formes d'invertébrés du plancton."

J. Smed: "Sur l'homogénéité de la couche d'eau dans le sud de la Mer du Nord."

R. E. Craig et T. Lovegrove: "Etude hydrographique et planctonique de la côte est de l'Ecosse."

R. E. Craig: "Caméra sous-marine utilisant le flash électronique."

B. Havinga: "La Sole; recherches aux Pays-Bas (par Boerema et Stamm)."

R. S. Wimpenny: "Sur la dérive des larves de plie dans la Mer Flamande en 1952."

En ce qui concerne le travail du Sous-Comité des Pêches comparatives, lecture est donnée des notes mises à la disposition des membres; note de M. A. R. Margetts: "Comment le poisson s'échappe des différentes parties d'un chalut" et de MM. B. B. Parrish et R. Ellis: "Comportement de la seine en pêche". Il est signalé que les deux films sous-marins "Le chalut en action" (Lowestoft) et "La seine en pêche" (Aberdeen) doivent être présentés à la Réunion Générale le Samedi 4 Octobre.

Le Dr. C. E. Lucas est réélu Président.

II. Programme de Travail.

Des programmes préliminaires pour les travaux scientifiques de 1953 sont présentés par la Norvège, l'Angleterre, la Hollande, la Suède et l'Ecosse; on espère que des programmes similaires pour les autres nations seront établis plus tard.

Comité Atlantique.

Le Prof. L. Fage préside.

I. Compte-rendu.

1. En l'absence de son Président, le Prof. J. le Gall, le Prof. Fage est demandé de présider cette assemblée.

2. Le rapport administratif est adopté. Pour les *Annales Biologiques* l'accord est unanime pour que l'on continue à appliquer les règles fixées par J. Hjort.

Les membres du Comité Atlantique insistent sur l'intérêt général de l'ouvrage de M. Bellón sur *Neothunnus albacora*, ils formulent le voeu que cet excellent travail soit publié en français et que le Conseil participe à sa publication[1]).

3. Les questions générales concernant les recherches sur les Clupéidés, les Thonidés, les Gadidés, sont débattues. Le programme de travaux à long-terme dressé par M. le Gall est adopté.

Une communication sur la pêche à Saint-Pierre et Miquelon est faite par le Dr. Ancellin et une autre sur la sardine algérienne par le Dr. Dieuzeide.

4. Colloque sur le Merlu. Les notes suivantes sont présentées:—

E. Postel: "Le merlu noir (*Merluccius senegalensis* Cadenat)."

P. de Franca: "Etude comparative de quelques caractères morphologiques et biométriques de *M. merluccius* L. et *M. senegalensis* Cadenat."

Cl. Maurin: "Etude comparative du 'merlu blanc' (*M. merluccius* L.) et du 'merlu noir' (*M. senegalensis* Cadenat)."

R. Letaconnoux: "Note sur le merlu de Méditerranée."

[1]) Voir la Rec. 4 a du Comité Consultatif.

B. B. Rae: "Note préliminaire sur la pêche du merlu en Ecosse."
Le Prof. Leloup fait une communication orale sur les résultats statistiques obtenus en Belgique.

M. Letaconnoux a été chargé par le Comité de faire un rapport d'ensemble sur cette importante question.
5. Le Prof. J. le Gall est réélu Président.

Sous-Comité Atlantique Européen.

Président: Dr. A. de M. Ramalho.

I. Compte-rendu.

1. Communications:—
J. le Gall (France): "A la recherche des thons".
B. Andreu, E. Anadon, P. Arté et R. Toll (Espagne): "Corrélation entre la moyenne vertébrale et la taille des sardines de la classe 0".
P. Desbrosses (France): "Observations effectuées en Mai 1951 dans la région de Terre-Neuve à bord du navire océanographique 'Président Théodore Tissier'".
F. Lozano (Espagne): "Le saurel ou chinchard".
2. Dr. J. Cuesta est élu Président.

Sous-Comité Atlantique Africain.

Président: Dr. J. Furnestin.

I. Compte-rendu.

1. Les communications suivantes sont faites:—
F. Frade: "Résumé des résultats des recherches biologiques dans les eaux marines et saumâtres de la Guinée Portugaise depuis 1945".
F. Lozano: "Travaux sur 'Mar Chica' (Melilla)".
C. F. Hickling: "L'Institut de Recherches des Pêches de l'Afrique de l'Ouest." (Freetown, Sierra Leone.)
E. Postel: "Observations hydrologiques au large de Dakar."
— "Les facies bionomiques des côtes du Sénégal."
— "Contribution à l'étude des Thonidés de l'Atlantique tropical."
R. Coupé: "Quatrième note sur les Sparidés de la côte marocaine (*Pagellus erythrinus* Linné et *P. bogaraveo* Brünnich)."
J. Furnestin: "L'alose d'El Kansera, cas d'une adaptation totale d'une espèce anadrome aux eaux douces."
2. Le Dr. J. Furnestin est réélu Président.

II. Programme de Travail.

Les projets de travaux présentés en 1951 ont été passés en revue. Devant l'ampleur des recherches à effectuer, les membres présents du Sous-Comité Atlantique Africain émettent le voeux que les spécialistes travaillant en Afrique se réunissent périodiquement pour élaborer des projets de recherches communes et déterminer des techniques d'études communes.

Ces réunions, comme celles de Biarritz pour l'étude des Clupeidés et de Málaga pour les Thonidés, auraient lieu dans une ville africaine, sous l'égide du C.I.E.M. et plus spécialement du Sous-Comité Africain, mais au frais des seuls états participants.

Comité Pélagique.

M. Árni Friðriksson préside.

Les rapports suivants sont lus et discutés:
M. O. Åsen: "Les expériences de marquage des harengs islando-norvégiens, illustrées par un film de l'auteur sur le marquage du hareng."
Dr. Aage J. C. Jensen: "Marquage de harengs dans les eaux danoises."
M. G. McPherson: "Expériences écossaises de marquage sur les harengs."
M. Á. Friðriksson: "Les harengs de la côte nord d'Islande en 1952."
Dr. J. Ancellin: "Hareng du sud de la Mer du Nord et de la Manche orientale 1951—1952."
M. O. Åsen: "Le cycle de maturité chez les harengs pondant au printemps."
Dr. J. Ancellin: "Influence de la pêche sur le stock de harengs (sud de la Mer du Nord et Manche orientale)."
M. B. B. Parrish et M. R. E. Craig: "Le programme hydrographique écossais pour l'étude du hareng."

Sous-Comité du Hareng.

Président: M. Árni Friðriksson.

I. Compte-rendu.

Des rapports sont présentés par M. F. Devold, le Dr. E. Bertelsen, M. U. Stefánsson (lecture par le Président), et le Dr. K. A. Andersson sur les recherches mises à exécution en 1951—1952 dans leurs pays respectifs. Pendant la discussion qui suit, un résumé est donné par les membres du Sous-Comité appartenant aux autres pays. Un grand nombre de rapports concernant des recherches sur le hareng sont renvoyés au Comité Pélagique.

En ce qui concerne la note de M. le Gall: "L'esprit des Annales Biologiques" soumise au Sous-Comité par le Comité Consultatif, les membres du Sous-Comité se déclarent d'accord avec les principes établis lors de la création des *Annales Biologiques*.

M. Árni Friðriksson est réélu Président.

II. Programme de Travail.

1. Il est décidé de se conformer à un plan commun pour la recherche du hareng et pour mettre à exécution le travail hydrographique sur le hareng Atlanto-Scandinave en Mai et Juin 1953. Les recherches seront poursuivies comme en 1952.
2. Un autre groupe de croisières en Août est recommandé et le Président est invité à prendre contact avec les membres par correspondance dans ce but.
3. Le Président et le Dr. Tåning sont invités à se mettre d'accord par correspondance pour une coopération internationale des recherches sur le stock de harengs du sud de la Mer du Nord par les pays spécialement intéressés.
4. Les recherches sur le hareng en général, y compris les marquages, seront poursuivies et, si possible, développées.

III. Recommandations.

1. Le Sous-Comité du Hareng considère qu'il n'est pas nécessaire d'établir un Sous-Comité spécial, comme le propose le Sous-Comité Hydro-Biologique; les membres sont toutefois favorables à l'extension des récoltes de plancton pendant les croisières suivant le programme établi[1]).
2. Le Sous-Comité du Hareng recommande que des mesures soient prises afin que des experts algologues, de tous les pays représentés puissent assister de temps en temps aux réunions du Conseil[2]).
3. Le Sous-Comité du Hareng recommande que des mesures soint prises afin que des rapports sur la détection des poissons (acoustique et optique) soient présentés, à la prochaine réunion du Conseil, au Comité Pélagique[3]).
4. Le Sous-Comité du Hareng soutient la recommandation proposée par le Sous-Comité du Secteur Nord-Ouest stipulant qu'il faut publier le matériel hydrographique des croisières du hareng en Mer du Nord[4]).

[1]) La recommandation du Comité Hydrographique dont il est question est retirée par le Président de ce Comité.

[2]) Le Comité Consultatif a convenu qu'aucun engagement ne doit être pris pour le moment (voir le rapport du Com. Consult. I, 5).

[3]) Accepté par le Comité Consultatif (voir le Rapport I, 3 b).

[4]) Accepté par le Comité Consultatif sous la forme de la Recommandation 3.

Comité du Saumon et de la Truite.

Président: M. Sven Sømme.

I. Compte-rendu.

Le Président souhaite la bienvenue aux membres et aux hôtes. La liste des membres du Comité est approuvée.

Des rapports sur les résultats des expériences de marquages de saumon en 1952 sont exposés par: le Dr. Went (Irlande), M. Pentelow (Angleterre), M. Vivier (France), M. Macfarlane remplaçant de M. Pyefinch (pour l'Ecosse), Dr. Carlin (Suède) et M. Sømme (Norvège).

M. Sømme résume quelques résultats généraux des deux dernières périodes triennales dans la coopération internationale de marquage, ce qui soulève une discussion.

M. K. Larsen lit un rapport sur l'étude de la truite de mer au Danemark pendant ces dernières années.

M. J. Knudsen donne un compte-rendu des pêches danoises du saumon dans la Baltique et une analyse sur les groupes de tailles capturés. Le Dr. Alm ajoute une information sur les pêches suédoises. Il apparaît que le stock de saumon de la Baltique est maintenant en décroissance et le Dr. Alm préconise la nécessité de mesures de protection.

M. Sømme informe le Comité qu'il a remis sa démission de son poste d'Inspecteur du Saumon et des Pêcheries d'eau douce de Norvège, et qu'il n'est plus officiellement attaché au travail de recherches. Il donne sa démission de membre actif du Comité.

Le Dr. A. E. J. Went est élu Président.

II. Programme de Travail.

Le Comité décide que le programme de marquage du saumon adopté aux réunions précédentes soit continué et qu'il soit laissé, aux pays participants, le soin d'établir leur propre programme de recherche dans la limite du plan général adopté.

III. Recommandation.

Le Comité désire exprimer son appréciation sur l'utilité d'un travail de marquage du saumon fait le long de la côte nord de l'Irlande et invite le Conseil à exprimer son avis auprès de l'autorité compétente pour formuler l'espoir que ces expériences soient continuées et étendues.

Comité des Mollusques et Crustacés.

Président: Dr. B. Havinga.

I. Compte-rendu.

Le Président souhaite la bienvenue aux membres du Comité et aux visiteurs, tout spécialement à ceux qui sont venus de l'autre côté de l'Atlantique.

Les épreuves des *Annales Biologiques* et du rapport administratif sont mises en circulation, leur rédaction est approuvée.

Le Président attire l'attention des membres sur une note de M. le Gall: "l'Esprit des Annales Biologiques". Le Comité est d'accord sur les principes qui furent exposés quand les *Annales Biologiques* ont été fondées.

Le passage d'une lettre de M. J. E. de Watteville est présenté, concernant les recherches sur les algues marines. Les membres du Comité estiment que le Conseil serait vivement intéressé par les recherches sur les algues marines et qu'il devrait envisager l'opportunité d'en discuter de temps à autre.

Le Président attire l'attention du Comité sur la réunion organisée par la "Commission Internationale pour l'Exploration Scientifique de la Mer Méditerranée" de la "Commission des Etangs Salés et Li mans", qui doit se tenir du 20 au 25 Octobre 1952

Crustacés.

Les contributions suivantes ont été reçues:

M. Ch. Gilis: "La pêche crevettière sur la côte belge; son évolution au cours des années 1935—1951 et son influence sur le stock de la crevette."

Dr. H. A. Cole et M. N. Mistakidis: "Invention pour la mensuration rapide et exacte de la longueur de la carapace chez les crevettes."

Dr. H. A. Cole: "Mesures de protection des stocks de homard."

Une discussion s'ensuit sur l'influence de la pêche sur le stock de crevettes. Le Comité exprime le voeu que les crevettes soient mesurées sur une ligne médiane dorsale allant de la base de la fosse oculaire jusqu'au bord postérieur du céphalothorax.

Un compte-rendu est donné sur les mesures de protection des homards, en vigueur dans les pays intéressés. Le Dr. A. W. Needler présente un examen de la situation au Canada.

Mollusques.

M. F. A. Gibson présente une étude sur la croissance et le développement des coquilles St-Jacques dans les eaux irlandaises.

Cultures Marines.

Le Président résume brièvement la correspondance avec F.A.O. sur la coopération avec les experts d'autres parties du monde. Il est décidé qu'aucune autre action ne sera entreprise, jusqu'à ce que soit prêt l'inventaire des Instituts qui doit être préparé par la F.A.O.

Les contributions suivantes ont été reçues:

Dr. P. Korringa: "Lutte contre les organismes de souillure dans l'industrie ostréicole de Zealand."

M. Ladouce: "Situation actuelle du cop rouge (*Mytilicola intestinalis*)."

Dr. P. Korringa: "Observations épidémiologiques sur *Mytilicola intestinalis* dans les eaux de Zealand."

Mme M. Couteaux-Bargeton: "Recherches sur *Mytilicola intestinalis*."

Le Dr. Havinga est réélu Président.

II. Programme de Travail.

Les recherches sur l'influence de la pêche vis-à-vis du stock de crevettes seront continuées. Le programme de travail concernant *Mytilicola* tel qu'il fut établi à Paris en 1951 est toujours en vigueur. Le Président est chargé de la récolte des renseignements pour l'établissement d'une carte de répartition du *Mytilicola*.

Comité Hydrographique.

Président: Prof. H. U. Sverdrup.

I. Compte-rendu.

La liste des membres du Comité est révisée.

Le rapport administratif pour 1951 est approuvé. Les projets de travail hydrographique pour 1953 sont discutés.

Dr. Tait rend compte du travail du Sous-Comité pour l'Organisation de Recherches Combinées Hydro-Biologiques et ses Recommandations 1 et 2 sont appuyées[1]).

Lt.-Cdr. Lumby présente un mémorandum sur les Cartes Hydrographiques Synoptiques (la Recommandation 1 est adoptée).

M. P. Tchernia rend compte du travail océanographique effectué par la Marine Nationale Française pendant la période 1948—1952. Le Comité complimente le Service Hydrographique de la Marine Nationale Française pour la publication du *Bulletin d'Information.*

Dr. Carruthers rend compte des travaux du Sous-Comité pour l'Avancement des Mesures de Courants dans tous leurs aspects. La Recommandation 2 est adoptée. La mention connexe suivante est adoptée à l'unanimité.

"Le Comité Hydrographique attache la plus grande importance à l'action des différentes organisations océanographiques nationales qui, bien que non chargées de recherches relatives aux pêcheries, exécutent sur l'eau de mer et ses mouvements des observations d'un grand intérêt pour le Conseil International pour l'Exploration de la Mer. Le Comité exprime son ferme espoir que le travail fait sur les courants de la Mer du Nord — du côté anglais sous la direction de l'Amirauté et de l'Institut Océanographique national, du côté allemand par l'Institut Hydrographique de Hambourg — sera continué et étendu. Le Comité espère qu'il en sera de même du travail océanographique exécuté par le Service Météorologique hollandais, la Marine française, les services maritimes du Ministère des Travaux Publics français et la Force Navale belge."

L'Hydrographe du Conseil présente des listes et des cartes donnant des informations sur les observations habituelles sur les sections définies ou aux stations fixes faites par les navires de recherches et ceux du commerce. Il est décidé que, dans le futur, toutes modifications (datées) de ces listes seront distribuées.

L'Hydrographe rend compte du travail effectué par le Service Hydrographique du Conseil pendant l'année précédente.

Le Comité tient à manifester sa satisfaction sur la façon dont le travail du Service Hydrographique à été conduit.

Le Président demande aux membres de faire parvenir leurs données hydrographiques au Service Hydrographique dans les plus brefs délais possibles.

Le désir d'inclure dans le Bulletin les données déjà publiées ailleurs est discuté. Il est décidé, en tenant compte du coût de leur reproduction, que des données hydrographiques ayant trait à toutes les régions couvertes par l'activité du Conseil, et pouvant avoir été publiées ailleurs soient également publiées dans le *Bulletin Hydrographique* du Conseil. Si elles ne le sont pas, les références voulues y seront indiquées.

Les communications suivantes sont faites:

Mlle E. Lisitzin: "Les variations du niveau de la mer dans la Baltique."

F. Koroleff: "Méthode de détermination du Calcium dans l'eau de mer et les sédiments du fond."

N. Jerlov: "Influence des matières suspendues et dissoutes sur la transparence de l'eau de mer."

Prennent part à la discussion: MM. Groen, Craig, Oppenheimer et Russell.

B. Kullenberg: "Les échanges d'eaux à travers le Détroit de Gibraltar."

Prennent part à la discussion: Dr. Carruthers et le Président.

Le Président entame une discussion sur la relation entre les travaux hydrographique et biologique et la collaboration entre les biologistes et les hydrographes. Il insiste sur la nécessité de s'exprimer d'une manière simple lorsqu'il s'agit de présenter les résultats hydrographiques aux comités étudiant les problèmes du point de vue biologique. Prennent part à la discussion: MM. Wimpenny, Carruthers, Lumby, Lucas, Böhnecke et le Président.

Le Prof. Sverdrup est réélu Président.

II. Recommandations.

1. Il est recommandé (a) que la production et la publication des cartes hydrographiques synoptiques, actuellement faites par le Laboratoire des Pêches de Lowestoft soient entreprises par le Service Hydrographique à partir du 1er Novembre 1952, et (b) que les Etats membres recevront gratuitement un nombre limité de séries et que tout envoi de séries additionnelles sera à leur charge. Il en sera de même pour les institutions des Etats non membres du Conseil.

2. Il est recommandé que le Sous-Comité pour l'Avancement des Mesures de Courants sous tous leurs aspects soit maintenu pendant une nouvelle année sous le nom de "Sous-Comité pour l'Obtention de Données Régulières sur les Courants."

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[1]) La Recommandation 2 est retirée ultérieurement par le Président du Comité Hydrographique, n'ayant pas été admise par le Sous-Comité du Hareng.

Sous-Comité pour l'Organisation de Recherches Combinées Hydro-Biologiques.

Président: Dr. J. B. Tait.

I. Compte-rendu.

Les sujets suivants sont examinés:

a) Rapports sur les recherches entreprises par le Sous-Comité en 1947—1949 inc.,

b) la question de la continuation du Sous-Comité.

Le Président qui est chargé de rapporter sur les investigations dans le détroit Féroë-Shetland au cours des années précitées explique que le compte rendu complet de l'hydrographie de cette région devra se baser sur les recherches antérieures. Un tel rapport plus complet remontant jusqu'à 1927 est en préparation pour être publié.

Dr. Eggvin signale qu'il a trouvé les mêmes difficultés en ce qui concerne la Mer du Nord dans le rapport des recherches du Sous-Comité.

Il propose, par conséquent, d'inclure les travaux effectués depuis un certain nombre d'années antérieures à 1939. Son rapport sera terminé aussitôt que les circonstances le permettront.

Concernant la question de savoir si le Sous-Comité doit poursuivre son activité le Président fait appel à des propositions au sujet de recherches combinées qui n'ont pas déjà été entreprises par un ou plusieurs comités existants et qui pourraient l'être par le présent Sous-Comité. Après discussion, il est adopté que la proposition avancée par le Professeur Braarud faisant l'objet de la Recommandation 1 ne nécessite pas la prolongation du Sous-Comité.

Il n'y a pas d'autres propositions.

II. Recommandations.

Le Sous-Comité recommande:

1. Que la suggestion suivante soit présentée d'abord devant le Sous-Comité du Hareng et ensuite devant le Comité des Mers Nordiques:

   Qu'un Sous-Comité *ad-hoc* soit constitué pour coordonner les recherches hydrographiques et biologiques se référant particulièrement au plancton dans la Mer de Norvège et de la Mer de Barentz, et qu'en plus d'autres noms pouvant être désignés par ces Comités, le Comité *ad-hoc* suggéré comprendrait: Prof. Braarud, Mag. Grøntved, Mag. Wiborg, Dr. Eggvin, Lt.-Cdr. Lumby and Dr. Tait[1]).

2. Que le Sous-Comité pour l'Organisation de Recherches Combinées Hydro-Biologiques soit dissous.

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[1]) La recommandation a été appuyée par le Comité Hydrographique, puis retirée ultérieurement par son Président n'ayant pas été appuyée par le Sous-Comité du Hareng.

Comité du Plancton.

Président: Professeur T. Braarud.

I. Compte-rendu.

Le Président fait état de la grande perte éprouvée par les spécialistes du plancton dans la mort du Dr. P. Jespersen, et le Comité rend hommage à sa mémoire.

Les travaux suivants sont présentés:

E. Steeman Nielsen (Copenhague): "La production de la matière organique dans les Océans (résultats de l'expédition de la 'Galathea')."

P. Haller-Nielsen (Oslo): "Le cycle annuel du phyto-plancton à la station 'M' du navire météorologique dans la Mer de Norvége."

O. J. Østvedt (Oslo): "La migration verticale annuelle chez les Copépodes (observations effectuées à la station 'M' du navire météorologique dans la Mer de Norvège)."

H. U. Sverdrup (Oslo): "Sur les conditions de floraison printanière du phyto-plancton."

D. H. Cushing (Lowestoft): "Le plancton considéré comme base de l'industrie des pêches."

K. M. Rae (Edinburgh): "Les résultats du 'plankton recorder' et leurs relations avec l'hydrographie."

Kr. Fr. Wiborg (Bergen): "Variations quantitatives des volumes d'échantillons de zooplancton à la position 'M' dans la Mer de Norvège et sur les côtes de Norvège pendant 1949—1951."

T. Braarud (Oslo): "Etudes du plancton au moyen d'un microscope électronique.

M. F. S. Russell rend compte de la situation présente concernant la préparation des Fiches planctoniques et la recommandation mentionnée ci-dessous est adoptée.

La question de savoir si le Conseil International doit inclure dans son programme des recherches sur l'utilisation des algues est discutée. Aucune résolution définitive n'est arrêtée.

Le Professeur Braarud est réélu Président.

II. Recommandation.

La recommandation suivante est faite par le Comité: Il est nécessaire de nommer un éditeur pour les *Fiches d'Identification du Zooplancton*, en remplacement du Dr. P. Jespersen décédé. Il est préférable que cet éditeur habite à Copenhague pour être à même de donner un avis sur les détails d'intérêt scientifique. Il devrait être zoologiste. Le Comité propose que le Dr. Gunnar Thorson, de l'Université de Copenhague, soit prié de devenir Editeur. Le Dr. Thorson est particulièrement choisi parce qu'il est souhaitable de publier ultérieurement des fiches d'identification des stades larvaires.

Comité Statistique.

Président: Dr. Nils Rosén.

I. Compte-rendu.

Les *Bulletins Statistiques* pour 1948 et 1949 sont présentés au Comité. Pas de remarque.

Le Président déclare avoir reçu la plus grande partie du matériel pour le *Bulletin Statistique* pour 1950 et il espère que le reste du matériel sera bientôt en sa possession.

Le Dr. Rosén fait un court rapport sur la réunion de la F.A.O. ("Statistiques de Pêche") tenue à Copenhague en Mai 1952.

Le Dr. Nils Rosén est réélu Président pour l'année suivante.

II. Recommandation.

Il sera demandé aux Etats membres quel est le facteur de conversion employé lorsqu'il en est fait état, dans les statistiques du poisson rond frais. Il leur sera rappelé l'importance des statistiques au sujet de l'effort de pêche.

2ÈME PARTIE

RAPPORT ADMINISTRATIF

REPORT

of

ADMINISTRATION FOR THE YEAR ENDING OCTOBER 31st 1952

I. General.

DURING the year under review the German Federal Republic's application for re-admission to the Council was unanimously approved by the participating States. Germany's re-entry is from 1st November 1952, and the Delegates appointed to the Council, together with the German Experts, were invited to attend the Jubilee Meeting.

Meetings of the Bureau, attended by all Members, and the Chairman of the Consultative Committee, took place in March and September—October 1952, at Copenhagen. The President and two Vice-Presidents, i. e., Mr. LIENESCH and Professor SVERDRUP, met in May 1952 at Copenhagen, to appoint a new General Secretary.

II. Work at the Central Office in Copenhagen.

On the 20th December 1951 the General Secretary, Dr. POUL JESPERSEN, died. On the 16th May 1952, the Bureau appointed Mr. VILLY DESSAU as General Secretary, as from 1st June 1952.

The routine work has been carried out as usual in all departments.

The following publications

	were issued	are in preparation
Rapp. et Proc.-Verb., Vols. No.	130, 131, 132	133, 134
Annales Biologiques, Vol.	VII	VIII
Journal du Conseil, Vol.	XVIII, 1 & 2	XVIII, 3
Zooplankton Identification Sheets, Nos.	41—49	—
Bulletin Statistique, Vol.	XXXIII, 1948, XXXIV, 1949	XXXV, 1950
Bulletin Hydrograph.	For 1949	For 1950

The Income and Expenditure Account for the year 1st November 1951—31st October 1952 appears overleaf.

Income and Expenditure Account for the year 1/11 1951—31/10 1952.

EXPENDITURE

I. Incidentals	D. kr.	D. kr.
President	5,000.00	
Editor of the Journal du Conseil	3,000.00	
Assistance to Editor of the Journal	1,500.00	
Chairman of the Consultative Ctee.	109.70	
Chairmen of Sub-Committees and Committees	25,200.00	
Editor of Statistics	2,000.00	36,809.70
II. Headquarter Staff		
General Secretary, Dr. P. Jespersen, 3 months salary	2,571.99	
+ extraord. cost-of-living bonus	291.60	2,863.59
General Secretary, Mr. Villy Dessau 1/6—31/10 1952		6,250.00
Editorial Assistance		1,500.00
Assistant Secretary (General)	12,390.10	
+ extraord. cost-of-living bonus 1/11 1951—31/5 1952[1]	680.40	
+ extra, as acting General Secretary 1/10 1951—31/5 1952[2]	2,000.00	15,070.50
Assistant Secretary (Information)	11,525.53	
+ extraord. cost-of-living bonus 1/11 1951—31/5 1952[1]	680.40	
+ extra for increased responsibility 1/10 1951—31/5 1952[2]	666.67	12,872.60
Statistical Secretary	9,417.70	
+ extraord. cost-of-living bonus 1/11 1951—31/5 1952[1]	529.20	9,946.90
Secretarial Assistant	8,484.00	
+ extraord. cost-of-living bonus 1/11 1951—31/5 1952[1]	450.45	
+ extra for increased work 1/10 1951—31/5 1952[2]	666.67	9,601.12
Clerical Assistant	7,256.74	
+ extraord. cost-of-living bonus 1/11 1951—31/5 1952[1]	420.00	7,676.74 65,781.45
III. Hydrographical Staff		
Hydrographer	15,170.61	
+ extraord. cost-of-living bonus 1/11 1951—31/5 1952[1]	792.75	15,963.36
Clerical Assistant	7,256.74	
+ extraord. cost-of-living bonus 1/11 1951—31/5 1952[1]	420.00	7,676.74
Assistance		338.00
Card Index work		1,494.50 25,472.60
To carry over		128,063.75

RECEIPTS

I. Contributions	D. kr.	D. kr.
France	30,000.00	
Great Britain	30,000.00	
Belgium	15,000.00	
Denmark	15,000.00	
Holland	15,072.17	
Iceland	15,000.00	
Ireland	15,000.00	
Norway	15,000.00	
Portugal	15,000.00	
Spain	15,000.00	
Sweden	15,000.00	
Finland	7,500.00	202,572.17
II. Interest		
On Bank Deposits	568.30	
On Investments	4,132.50	4,700.80
III. Sale of Publications		16,290.94
IV. Received from Woods Hoole Oceanographic Institution towards assistance with American Observations for Bulletin Hydrographique		1,500.00
III. Balance of Vote for War Insurance which was carried to Creditors		1,435.00
To carry over		226,498.91

Income and Expenditure Account (continued).

EXPENDITURE	D. kr.	D. kr.	RECEIPTS	D. kr.	D. kr.
Carried over ...		128,063.75	Carried over ...		226,498.91
IV. Office Expenses					
Rent	5,580.00				
Light and Heating	1,166.95				
Stationery	2,397.62				
Telephone, Telegrams, Postage	2,459.17				
Furniture and Fittings	143.30				
Insurance	498.76				
Upkeep	3,479.11				
Sundries	5,291.54	21,016.45			
V. Travelling Expenses		7,343.38			
VI. Printing and Distribution					
Printing	54,362.21				
Translations	275.00				
Distribution	713.20	55,350.41			
VII. Pensions					
Carried to Pension Fund Account	394.12				
To Pensionsforsikringsanstalten from $^{22}/_{7}$ 1952 to $^{31}/_{10}$ 1952	2,060.53				
Less individual contributions $^{1}/_{11}$ 1951—$^{31}/_{10}$ 1952	1,575.80	484.73			878.85
VIII. Extraord. cost-of-living Bonus. 4,264.80 kr. specified under II and III[1]).					
IX. Mrs. BLEGVAD		3,000.00			
X. Unexpended Votes carried to Creditors		16,149.59	**Excess of Expenditure over Income**		5,303.52
		231,802.43			231,802.43

[1]) From 1 June 1952 included in the salary.
[2]) The Bureau, on 2 March 1952, voted 2,500 kroner (on 5 May 1952 increased to 3,333.34) as payment for increased work and responsibility from 1 October 1951, and until appointment of a General Secretary.

Pension-Fund.

EXPENDITURE	D. kr.	D. kr.	RECEIPTS	D. kr.	D. kr.
Pension paid	6,350.12		Balance as per 1 November 1951		107,440.04
Extraordinary cost-of-living bonus $^{1}/_{11}$ 1951 – $^{31}/_{5}$ 1952	294.00		Interest: On Bank Deposits	39.62	
		6,644.12	Interest: On Investments	4,462.75	
					4,502.37
Balance as per $^{31}/_{10}$ 1952		105,692.41	Carried from General Account		394.12
		112,336.53			112,336.53

Balance Sheet 31 October 1952.

LIABILITIES	D. kr.	D. kr.
Capital Reserve:		
Capital Account 22,861.19		
Special Suspense Account 50,485.00		
	73,346.19	
Less Excess of Expenditure over Income	5,303.52	
		68,042.67
Pension Fund		105,692.41
Creditors:		
Contributions prepaid	15,000.00	
Publications sold prepaid	7,500.00	
Loan of Sparekassen	80,000.00	
Unexpended Vote from 1951/52 ..	16,149.59	
Unexpended Vote from 1950/51 ..	2,616.77	
Sundry Creditors	31,48	
		121,297.84
		295,032.92

ASSETS	D. kr.	D. kr.
Cash at Sparekassen	82,973.80	
Cash at Handelsbanken	64,03	
Cash at Postgiro	227.68	
Cash in hand	1,599.96	
		84,865.47
Danish Treasury Bonds as per $^{31}/_{10}$ 1952 nominal value kr. 95,000.00 at cost ..... (Market value on $^{31}/_{10}$ 1952: Kr. 79,305.00)		104,444.61
Pension Fund: Danish Treasury Bonds as per $^{31}/_{10}$ 1952 nominal value 108,500.00 at cost ..... (Market value on $^{31}/_{10}$ 1952 kr. 86,419.50)		105,692.41
Bonds at a nominal value of kr. 138,400.00 are lodged with the Sparekassen as security for the loan of kr. 80,000.00. on $^{27}/_{10}$ 1952.		
Sundry Debtors		30.43
		295,032.92

VILLY DESSAU / E. BRØNNICHE

I have compared the above Balance Sheet with the Books and Vouchers of the Council, and certify that it is in accordance therewith. I have verified the existence of the cash on hand and at bankers as well as of the Treasury Bonds.

Copenhagen, 13th December 1952.

(sign.) KARL SØRENSEN,
State-Certified Auditor.

PREFACE

THESE reports for the year 1951 are given under a new arrangement, due to the re-organisation of the Council's Committee work that was brought into force in that year. In order to avoid repetition of remarks on subjects of wide interest in several of the Area Committees, and in order to make it more convenient for all those interested to be present at such discussions, some larger, inclusive, Committees were set up, having as their Sub-Committees some of the former Committees. The work of the Council, which is both functional and local in interest, does not lend itself to an entirely logical arrangement, and the new order is something of a compromise. It can be seen at a glance in the contents table to this volume; and was thought by the Consultative Committee to have worked well on its first trial.

M. GRAHAM

NORTHERN SEAS COMMITTEE

North-Eastern Area Sub-Committee.

1951

By Gunnar Rollefsen

England

(G. C. Trout).

Seven cruises were undertaken by the "Ernest Holt" during the year, six in the Bear Island area and one diverted therefrom to the central Barents Sea because of extensive ice fields over the Bear Island Banks.

Hydrography. This year saw the cessation of work on the South Bear Island Section (Loppen to Cape Bull). This section and the West Bear Island Section were completed in January but during four later cruises, March, June, September, and November, only the Western Section was attempted—ice conditions prevented its completion in March and again in November. In all cases standard depths were worked for temperature, salinity and oxygen determinations were made at selected depths.

Plankton. In addition to the routine duplicated Hensen-net hauls from 100 metres to surface for quantitative estimates of abundance and fat content determinations, 1 and 2-metre tow-nets were used to sample macroplankton in studies connected with the cod/capelin association, as an extension of previous work in the Bear Island and Hope Island areas. Two cruises were made with this as the main study.

Tagging. One cruise in August/September was spent in tagging cod at Hope Island and Spitzbergen in order to test the current hypothesis on feeding and return migration, which had been deduced from earlier otolith studies.

Two types of tag were used, (1) Lea type, hydrostatic tags and (2) black ebonite cheek buttons, the total of 3236 fish released being distributed as follows: Hope Island 1995—997 Lea tags, 998 cheek buttons; Spitzbergen 1241—658 Lea tags and 583 buttons.

The remainder of the year's work was divided between work on the so-called "wintering grounds" of Maslov, in search of "wintering" immature fish in the Bear Island region (two cruises in January and March) and a continuation of the earlier temperature and population studies.

France

(P. Desbrosses).

L'Aviso "Ailette" a effectué des prélèvements d'eau et des prises de températures au mois de Juin 1951 de l'île aux Ours au Cap Nord.

Norway

(G. Rollefsen.)

Hydrography and Plankton.

See reports to relevant Committees.

Biology.

Cod. The investigations were continued on about the same scale as in the preceding year. In spring cod investigations were carried out off north Norway and in the Barents Sea on a 2 months' cruise with R/V "G. O. Sars". The vessel investigated the same area during a 3 weeks' cruise in the autumn.

The material collected from the Lofoten area comprises measurements of about 43,000, and age determinations of about 11,000 fish. Age determinations were also carried out on approximately 8000 cod from the banks off Troms and Finnmark.

Through the introduction of the purse seine as a new fishing gear in Lofoten, we have gained information which partly alters the picture previously formed of the stock of spawning "skrei".

The marking experiments on cod on the Lofoten banks were continued in 1951. From 7. to 28. March 1483 fish were marked. The object of these investigations is to extend our knowledge of the migrations of the cod. Also, we want to get an indication of the intensity of the taxation on this stock.

Haddock. Material for age determinations was collected from the Barents Sea, Finnmark and the banks off Vesteraalen.

Herring. See Herring Sub-Committee.

Other Investigations.

The occurrence of the 0 and I-groups of cod, haddock, coalfish and redfish were investigated during a cruise with "Johan Hjort" in September/November.

Statistical work on the extensive vertebrae material of the cod 0-group, collected on almost yearly cruises since 1930, has been commenced.

Hatching and breeding experiments on flatfish were continued, but on a reduced scale.

Scotland.

In February and April, 1951, "Explorer" made voyages extending as far as the southern limits of the area. Hydrographic and plankton observations were made and special attention was given to the distribution of haddock eggs and larvae over the Norwegian Deep. "Scotia" carried out observations at several stations in the same region during December. The data collected during these cruises have been reviewed in a report for the Northern North Sea.

North-Western Area Sub-Committee.

1951

By Å. Vedel Tåning

During 1951 the following research vessels have operated in the area:—

Denmark: "Dana", "Adolf Jensen".
Iceland: "Maria Julia".
Norway: "G. O. Sars".
Scotland: "Scotia", "Explorer".
Sweden: "Skagerak".

Moreover observations were collected by some chartered vessels, fishery inspection vessels, route vessels etc., e. g. the English Ocean Weather Ship "I", the French frigate "Aventure", the Icelandic M/S "Faxaborg" and M/S "Svanholm", the Norwegian M/S "Havmann I" and the Danish inspection vessel "Heimdal" *et al.*

Holland and Ireland did not operate in the area during the year.

Observations and reports on the results are published in the *Bulletin Hydrographique*, *Annales Biologiques* and in national publications (see the "Current Bibliography" of the *Journal du Conseil*).

Denmark

Faroes (Å. Vedel Tåning).

The research vessel "Dana" operated a total of 130 stations in the Faroe-Shetland channel, around the Faroes, north of the Faroes, in the area between Faroes and Reykjanes ridge and from here to the waters west of the Hebrides from 7. June to 1. July. The vessel continued work also later in the year, viz., from 19. November to 13. December, in the same area, especially north and north-east of the Faroes and in the Faroe-Shetland channel; 92 stations were operated.

The research cutter "Adolf Jensen" operated in West Greenland waters during the summer. Moreover some material of value to the investigations was secured by inspection vessels of the Danish Navy.

From the Faroe area material was secured for quantitative studies of the occurrence of fry of cod, haddock and saithe; trawling experiments, with a 50′ otter-trawl, were carried out on some localities off the northern islands, and a lobster trawl was operated in Kalbak fjord.

Material for age-assessment of cod was mainly secured from commercial catches, especially from the "Vaargrund" north of the islands. The fisheries laboratory in Thorshavn was especially engaged in this work.

In combination with the herring work (see the Herring Sub-Committee) ordinary hydrographic data and bathythermograph data were secured and Hensen net hauls, plankton samples (secured by 2 m. stramin net) and phytoplankton samples were also obtained.

The section from the Faroes west to Reykjanes ridge along 62° N. Lat. was operated during late June; hydrographic observations were secured to the greatest depths, plankton sampling (2 m. stramin net) on 8 stations.

In the area west of the Hebrides *Anguilla* leptocephalids were secured for respiration experiments; and several other pelagic animals were included in this investigation.

The Faroe-Shetland routine section was operated on 7.—9. June and 10.—13. December.

West Greenland Waters (Paul M. Hansen).

Owing to the installation of a new engine in the research vessel "Adolf Jensen" the season began very late in 1951. Research work was carried out from July to the beginning of October along West Greenland from 60° N. Lat. to about 67° N. Lat.

Cod. Samples of about 6200 otoliths have been collected partly from the research vessel and partly from the different fisheries stations. A collection of about 450 otoliths was taken at Angmagssalik on the east coast. Only about 1300 otoliths have been analysed to date. These samples have especially been taken in Holsteinsborg and Godthåb districts.

1882 cod were tagged in 1951. Different sorts of marks were used. Small cod were marked with Lea marks and yellow and red nocatene marks. Big cod were marked with hardrubber discs.

Marked Cod in West Greenland Waters 1951.

Position	Date		Serial No. of tags	Number of fish marked
		Hardrubber discs.		
64°32′ N. 50°35′ W.	1./8.	Dan	32051–32063	13
64°15′ N. 50°10′ W.	11./8.	–	32064–32101	38
63°04′ N. 50°59′ W.	18./8.	–	32102–32154	53
62°04′ N. 49°30′ W.	21./22./8.	–	32155–32260	105
61°10′ N. 48°35′ W.	30./8., 11./9.	–	32261–32364	104
60°26′ N. 45°35′ W.	18./9., 20./9.	–	32365–33000	200
		Lea tags.		
62°04′ N. 49°30′ W.	22./8.	D	551–743	193
		Nocatene (red).		
62°04′ N. 49°30′ W.	21./8.	DaG	101—200	100
		Notacene (yellow).		
64°15′ N. 50°30′ W.	11./8.	DaG	101–128	28
63°04′ N. 50°59′ W.	18./8.	–	129–130	2
62°04′ N. 49°30′ W.	21./8., 22./8.	–	131–246	183
		–	434–500	
		Hardrubber discs.		
60°10′ N. 45°21′ W.	24.–25./9.	DaG	1001–1127	573
		–	2055–2500	
60°26′ N. 45°35′ W.	20./9.	–	2001–2054	54

Prawns (*Pandalus borealis*). Trawling experiments were carried out in Godthåbsfjord, Kvanefjord, Arsukfjord and in some fjords in Julianehåb district. Good prawn-beds were found in Arsukfjord and Igalikofjord. Samples of prawns from different localities were collected for closer examination in the laboratory.

Hydrographic Observations were taken in different fjords in coastal waters and over Fylla Bank and Dana Bank.

England

(R. S. Wimpenny).

The only work undertaken by England in 1951 has been plankton sampling from the Ocean Weather Ship working at position "I" in 59° N., 19° W. Twenty-four fine international net hauls from 50 metres to the surface were taken at this station at about fortnightly intervals.

France

(P. Desbrosses).

The frigate "Aventure" of the French Navy carried out the following operations between 15. August and 4. September:—9 hydrological stations from Labrador to West Greenland, north to Hellefiske Bank (57°55′ N. Lat. to 67°33′ N. Lat.) including temperature observations and water samples from the surface to a depth of 450 metres.

Iceland

(Árni Friðriksson).

Work at Sea. Four cruises were made with the research vessel "Maria Julia". The first one started on 14. April, when marking of cod and plaice took place and fish larvae, especially those of the herring, were sought for off the southern and south-western coasts. The cruise ended on 7. May. During the period 22. June—9. July another cruise was made to seek for herring shoals. Numerous hydrographical observations were made and plankton was sampled in the area from Reykjanes (SW.) to Siglufjord (N.), both near the coast and far out in the open ocean. During the third cruise, which started from Reykjavik on 18. July and lasted until 7. August, routine work was made on fixed stations and sections all around the country. Finally the last cruise was devoted to activities in the north and east and a section was made from Iceland to Jan Mayen. This cruise, which started from Reykjavik, lasted from 10. to 25. August. A motor vessel, "Faxaborg", was chartered to do herring work in the area north and east of Iceland during the first half of July.—A special boat, MV. "Svanholm", was in charge of herring tagging in the north-east, during July and August.

Herring. See the report of the Herring Sub-Committee.

Cod. 34,598 fish were measured and otoliths from 10,402 cod were sampled for age-determinations. The material originated from the following localities (otoliths in brackets):—south: The Westman Isles 7411 (3003); south-west: Keflavik 5315 (1302), Reykjavik 7675 (2239), Akranes 3794 (1000), Grundarfjord 595 (150); north: Dalvik 2316 (1335), Husavik 6619 (1039); south-east: Hornafjord 638 (99); "Maria Julia" (235). The working out of material from previous years was completed, a continuous series of records now being available for the period 1928—1951. Statistical data from Icelandic trawlers were collected and compiled. 1106 fish were tagged off the south and south-west coasts.

Saithe. About 5000 fish, which were caught in purse-seines off the north coast during summer, were measured and about 1000 were examined as to age by means of the otoliths.

Halibut. Material (otoliths) collected in 1950 and comprising 773 fish, was worked up as to age, size, growth etc.

Plaice. 700 fish were tagged in the Faxa Bay.

Redfish. Market analyses on catches from the redfish grounds were carried out in Akranes. About 2000 fish were measured in Siglufjord during summer and 2000 in Akranes in November where otoliths from 200 fish also were collected.

Plankton. A number of plankton samples were collected during the cruises of the vessels. This material as well as collections from 1948—1950 are now being worked out. Some sampling was made with the Hardy Plankton Indicator.

Hydrography. About 2000 water samples were collected and mostly worked up in the laboratory. A series of bathymetrographical observations were also made (Bathythermograph), and the thermographical surface service on commercial routes was continued.

Norway

(Birger Rasmussen.)

In the summer of 1951 a cruise was undertaken to the West Greenland fishing grounds. The Norwegian fishing vessel M/S "Havmann I" was leased for the fishery investigations which lasted from 10. July to 14. August.

Hydrography. Three hydrographic sections were taken, viz., across Fyllas Bank, Lille Hellefiske Bank and Store Hellefiske Bank. The temperature readings showed that in early July a layer of cold water with temperature below 0° C. was lying some distance west of the banks in a depth of 50—75 m. Below this layer the temperature increased slowly to 2° C. at a depth of 300 m. with still warmer water below. On the slope of the banks proper where the long-line fishing is generally carried out, the bottom temperatures were thus below 2° C. This had a marked influence on the fishery the results of which had been good in June, but decreased considerably in July. In early August the cold water began to disappear, and by the middle of August the fishery on the edge of the banks was reported to be improving. The cold water found off the banks did not penetrate to the shallow portions of the banks near the shore.

The Cod Population. During our fishery investigations several long-line catches were sampled, and measurements and otoliths were taken from 3000 fish. The material has not yet been worked up completely, but the temporary readings indicate that cod of the year-class 1942, which proved so rich last year, still maintains its strength and bears the brunt of the long-line fishing. In one sample taken on Store Hellefiske Bank the year-class 1942 contributed approximately 40% to the catch. Also large fish of the year-classes 1934 and 1936 still seem to be quite numerous, particularly on the northern banks.

Tagging of Cod. In 1951 a total of 200 cod were tagged on the banks. The type of mark used was the Lea tag fastened with nylon thread between 1st and 2nd dorsal fin. Of the marked cod 100 were liberated on Store Hellefiske Bank, while another 100 were tagged in Holsteinsborg Deep. The latter fish were presumably cod which had migrated out from the Holsteinsborg fjords, and which at the time of marking were standing in pelagic shoals at a depth of 10—20 fathoms.

A special report on the investigations in Greenland waters 1948—51 will appear in *Annales Biologiques* VIII.

Other Work (including cruises carried out by "G. O. Sars"). Work on herring has been carried out in 1951 by Finn Devold and Olav Aasen. A review of this work is given in the report of the Herring Sub-Committee. The investigations in this area will also be mentioned by Dr. J. Eggvin in the Hydrographic Committee and by Kr. Fr. Wiborg in the Plankton Committee.

Scotland

(B. B. Rae).

During 1951 six cruises were carried out by Scottish research vessels in the North-Western Area. The dates and areas covered are as follows:—

1.	"Scotia"	23rd April to 7th May; Butt of Lewis, Faroe, Shetland.
2.	"Scotia"	16th May to 3rd June; Butt of Lewis, Faroe Bank, Faroe, line N. from Enniberg (part), Shetland.
3.	"Explorer"	7th to 20th July; Butt of Lewis, Faroe Bank, Faroe, Shetland.
4.	"Scotia"	14th August to 5th September; Butt of Lewis, Faroe Bank, Faroe, Iceland (S. coast to Faxa Bay), Hebrides.
5.	"Scotia"	15th to 28th September; Butt of Lewis, Faroe Bank, Faroe, Shetland.
6.	"Scotia"	12th October to 1st November; Butt of Lewis, Faroe, line N. from Enniberg (part), Shetland.

Hydrographical, plankton and trawling observations were made on each cruise. In addition to the usual recordings of temperatures and collection of water samples for salinity determinations, numerous oxygen and phosphate analyses were carried out.

Plankton sampling was by means of the customary nets. This work included a continuation of the detailed haddock egg and larvae investigations commenced in 1950.

Routine observations were carried out on all fish and invertebrates caught by the otter-trawl. On certain cruises tagging of haddock was continued round the Faroes. The problem of the differences in day and night fishing at the Faroes was also investigated.

Market sampling of Faroe haddock was continued from Aberdeen trawler catches and a beginning was made with similar work on Icelandic stocks. Sampling of halibut catches by great line vessels from W. Icelandic grounds was also continued at Aberdeen.

Some of the results of these investigations are dealt with in *Annales Biologiques* VIII.

Sweden

(A. Molander).

Fishing experiments (line fishery) and investigations of the stock of ling were carried out by "Skagerak" off the Hebrides and the Shetland Islands during June.

North Sea Sub-Committee.

1951

By C. E. Lucas

An important feature has been the union of the previous Southern North Sea and Northern North Sea Committees to form the new North Sea Sub-Committee of the Northern Seas Committee. This has the valuable result that both in the Reports and in the *Annales Biologiques* investigations in the North Sea can be viewed as a whole.

Another satisfactory feature is the increasing realisation of the value of organised co-operation within the area wherever the scientists of the different countries are engaged on similar problems. There is every reason to believe that such co-operative work will result in much more rapid progress.

Comparative fishing tests and investigations of the mode of action of fishing gear continue to add to our knowledge of fishing problems. Unfortunately, the signs of overfishing in the Sub-Committee's area are no less serious than they were. A point of major significance is the increasing interest in the development of pelagic fishing gears.

The rapidly developing investigations of the North Sea herring stocks are being reported to the Herring Sub-Committee. It is important to note here the attempts to evaluate the catches more precisely than in the past, as well as the information being gained about inter-relationships between the different fisheries from returns of herring tagging.

The following Reports have been received from representatives of the countries concerned.

Belgium

(E. Leloup).

Hydrographical Observations were taken aboard the lightship "West Hinder" and the fishery protection vessels "Luitenant Victor Billet" and "Hinders". For details see the reports of the Hydrographical and Plankton Committees.

Herring. See the report of the Herring Sub-Committee.

Other Fish. Every week, when hake from the Moray Firth was available, the lengths of 300—400 Frs. fish landed at Ostend were recorded, in order to determine the distribution of the cm. lengths and its variations throughout the year.

Shrimps (*Crangon vulgaris*). See the report of the Shellfish Committee, Crustacea. During the study on the biology of the shrimps, observations were carried out on the fish caught with the shrimp trawl. All fish are measured, counted and weighed per species, in order to determine which species of fish frequent the Belgian coastal waters during the course of the year and also to establish the variations in their relative abundance.

Denmark

(Å. V. Tåning).

Work at Sea.

"Dana" operated in the North Sea from 29. April to 7. June, crossed the northern North Sea 2. to 4. July and operated again in the northern North Sea 16. to 18. November.

The routine hydrobiological survey along the lines R and S of the North Sea hydrographical programme was carried out 16.—21. May (hydrography, straminnet hauls, Hensen-net hauls etc.). A general bottom sampling survey was carried out, especially of the central North Sea (Dogger Bank), where about 230 bottom samples were secured. Danish seine, plaice-trawl and 50′ otter-trawl were operated on various localities. About 2400 plaice were marked.

The experimental cutter "Jens Væver" operated in the North Sea during the summer and secured some material for biological purposes. In June the vessel operated 30 stations, of which 23 were south of Horns Reef, for a study of the stock of young plaice. From 31. August to 14. September the cutter carried out herring work especially in the Fladen Ground Area; about 1000 herring were tagged.

In the coastal waters (the Wadden Sea) the young-plaice-trawl was operated from a motor boat in June, September and October; 60 stations were operated from Ho Bay to the southern Fanø area.

Work on the Fish Species.

Plaice. The stock of 0-group—II-group plaice in the Waddensea was studied. Abundance of young plaice in the Horns Reef area was determined as in previous years. Market measurements of plaice was carried out in Esbjerg in April, May, June, September, and October; a total of 28,000 was measured and ca. 500 age-determined. Experiments were carried out in the Horns Reef area and Esbjerg harbour on the influence of transportation etc. on the viability of plaice. 1250 plaice were marked in the Horns Reef area. Marking of 1150 large plaice was carried out in the central North Sea (Doggerbank-area), of which abt. 300 double-marked.

Food of plaice was studied in the central North Sea as a continuation of several years work.

Herring. Samples of herring were secured during all seasons and marking experiments were carried out on Fladen Ground (see the Herring Sub-Committee's report).

Other Fish. Material for age-assessment was secured during the cruises of the "Dana" of cod, haddock, whiting, dab, turbot, sole, and other species.

England

(R. S. Wimpenny).

Work at Sea.

Although the research ships "Sir Lancelot", "Platessa" and "Onaway" were in full commission throughout the year, only a part of their time was occupied on the work with which the North Sea Sub-Committee is concerned, the "Sir Lancelot" making thirteen, the "Platessa" seven, and the "Onaway" two relevant cruises.

The "Sir Lancelot" carried out five cruises between January and April for the purpose of investigating the drift and spread of developing plaice larvae in the Southern Bight, followed by three more dealing with the relation between plaice, benthos, and plankton south of the Dogger and in the Leman area. In June hydrographic observations on currents were made in the Southern Bight, followed by a cruise off the N.E. coast of England, dealing with the plankton, its fat content, and their relation to the herring. In early October the ship was on view at the Council's Amsterdam meeting, and in November one cruise was given over to the Texel line observations, and the next to a comparative fishing experiment with a Grimsby trawler.

Of the "Platessa's" cruises, five were allotted to comparative fishing experiments, including three tests of the Larsson pelagic trawl in August, September and December. A comparative experiment with a Lowestoft trawler started in July failed owing to an engine breakdown of the commercial trawler, and an experiment on differential release through various parts of the trawl to be shortened in December owing to bad weather.

The "Onaway's" first cruise was in January when she worked in the eastern end of the Channel, and located large sprat shoals made up of unusually large individuals in Rye Bay. The second cruise in February consisted of tests with floats and doors suitable for use with a pelagic trawl.

Work on the Fish Species.

Sprat. An echo-survey over the sprat grounds of the English SE. coast was undertaken in January.

Cod. Measurements of North Sea cod were made at Grimsby (79,177).

Haddock. As in former years length measurements of haddock were undertaken on behalf of the Scottish observations on this fish. 8,974 measurements were made at Grimsby.

Plaice. Investigations began with a series of cruises planned to trace the further movements and distinctions of the larvae and post-larvae which originate from the great spawning in the Southern Bight. It was found that the position at which young plaice reach the bottom varies from week to week, depending on the water movements. Larvae freshly sunk from the plankton were taken in considerable numbers by the Agassiz trawl in water of about 12 fathoms up to 30 miles from the Dutch coast. As a result of a food analysis of metamorphosing plaice in this area it appeared that *Oikopleura* was the principal constituent.

Work on the 0 and I-group plaice off the Yorkshire coast was continued in June using a Danish young-plaice-trawl with metered wheels. A review of this inshore work suggests that the best catches are made at slack water and that regular quantitative sampling will have to be restricted to these times.

A survey of an area on the Dogger and another on the Leman grounds was carried out in May in order to assess the potentialities of plaice feeding grounds, which might be the sites of transplantations. Observations were made on the feeding and density of plaice, on the contemporary benthos, and on the overlying plankton. The results indicated that plaice population density on the Dogger was about a quarter of that on the Leman grounds, while the density of the lamellibranchs on which they were feeding was the reverse.

In fulfillment of a joint programme with Holland designed to investigate the abundance and spread of the year-classes of young plaice along the Dutch coast three trawl surveys were made along the Leman-Texel line.

A modified method of sampling for age-length distribution involving the collection of a smaller number of otoliths at Grimsby and Lowestoft was commenced in 1950 and was working smoothly in 1951. The following numbers of plaice were measured at three English ports, the number in brackets referring to those dealt with for age, sex and weight in addition to length.

Lowestoft	119,722 (1681)
Grimsby	44,725 (1726)
Hastings	4,218 (1750)

Work was commenced during the year on the factors governing the local movements of plaice and the interchange of fish between adjacent areas within the North Sea, as this is thought likely to have an effect on the variation in the distribution of the fishing effort on English market sampling data.

Sole. Observations have been made during the year with a view to assessing the stock of the North Sea sole. These have consisted of nearly sixteen thousand length measurements on Lowestoft market and selected quarterly samples for age, sex and maturity determination. Age-determination continues to offer difficulties. Opercular bones and scales have been found unpromising and otoliths are sometimes

clear but often not. Up to the present the best results have been obtained from the centre of vertebrae, especially when taken in conjunction with otoliths.

Comparative Fishing. At the beginning of the year experiments were made with various floats, kites, a dan leno otter-board, a pelagic beam-trawl and a single ship with a pelagic otter-trawl; of these, only the beam-trawl was unpromising. In order to obtain information about the fishing action of the trawl and the behaviour of fish in relation to it, an experiment was carried out to find which fish and what quantities escaped through various parts of the trawl. To do this different parts of the trawl were covered by shrimp netting on different hauls; the fish caught in the shrimp netting were compared in number and size for each species with those found in the cod-end, and the cod-end cover. It was found that escapes were few in the front part of the trawl but through the belly they were substantial.

Experimental cruises using the Larsson Pelagic trawl were made on a pilot scale in the latter half of the year and most operational problems were mastered.

France

(J. Ancellin).

Travaux en Mer.

Au début de l'année 1951, du 26 Janvier au 3 Février, le navire océanographique "Président Théodore Tissier" a effectué une série d'opérations en Manche orientale suivant les stations Portland — Barfleur — Beachy Head — Dungeness — Boulogne — Fécamp: 16 stations hydrologiques et pêches de plancton, 6 dragages et 9 chalutages au banc du Vergoyer.

Du 31 Janvier au 5 Février et du 17 au 23 Décembre des sorties ont été effectuées à bord du chalutier de recherches belge, le "Hinders", avec, pour programme de travail, en collaboration avec les Belges, le marquage de Harengs et les observations océanographiques courantes dans la région des Bancs des Flandres.

Du 25 au 27 Novembre une sortie a été faite dans le sud de la Mer du Nord et en Manche orientale, à bord du chalutier de Boulogne "Richelieu", en vue de suivre les enregistrements de bancs de poissons au sondeur à ultra-sons.

Les 3 et 4 Décembre une sortie en Manche orientale a été effectuée à bord d'un drifter.

L'aviso "Ailette" de la Marine Nationale a travaillé en Mai sur le banc d'Utsire, en Octobre du Skagerak au sud-ouest du Dogger Bank, faisant des prises de températures et des prélèvements d'eau en surface.

Espèce étudiée.

Des observations ont été faites sur le Merlan de la Manche orientale, à l'occasion de la campagne du "Président Théodore Tissier", et ont porté sur la répartition par tailles, par sexes, par âges et sur la première maturité sexuelle.

En outre les espèces comestibles pêchées au chalut ont été mesurées: hareng, maquereau, grondin, tacaud, plie, limande, etc.

Netherlands

(B. Havinga).

Work at Sea.

The "Antoni van Leeuwenhoek" made 35 cruises throughout the year. A series of 9 cruises has been carried out in February—April in order to study the distribution and behaviour of plaice larvae. 13 cruises have been made for investigations on the plaice stock, on routine lines seawards from the Dutch coast, in January, April, May, June and October. Additional observations on the diurnal variation in the catches were obtained.

Eleven cruises were devoted to technical investigations on trawl-nets and on echo-sounding gear in the second half of the year.

One cruise was made to the Shields area in July, in order to study the horizontal and vertical movements of the herring shoals.

General. All fish species caught in the routine trawling have been recorded, and partly measured.

Whiting. Length measurements and some scale samples were obtained for the assistance of the Scottish investigations on this species.

Plaice. The plaice investigations have been carried out in close cooperation with the English fisheries research.

The horizontal distribution of plaice larvae has been investigated by means of the Hensen-net and of horizontal plankton nets. In connection with the latter the vertical distribution of the larvae had to be studied. Investigations on the distribution of the youngest bottom stages, and on the reliability of the catch figures obtained with a narrow-meshed beam-trawl, were carried out.

The routine lines gave information about the age composition, density, growth and distribution of the plaice in the area between the Dutch coast and about 3° E.

Sole. Investigations have been started on the density, growth and age composition in the area between the Dutch coast and 3° E. Numbers, length measurements and otoliths were obtained from the trawling along the routine lines.

Fishing gear. Investigations have been carried out on the width and height of the mouth of the trawl-net, and on the strain in the warps.

Norway.

Hydrography.

See Hydrographical Committee.

Biology.

Plankton Investigations have been continued in some fjords in West Norway. A few permanent sta-

tions have been worked every week or every fortnight during the period February—September.

Herring. Investigations were continued during the year, the results being reported to the Herring Sub-Committee.

Mackerel. The methods for estimation of age and growth have been studied. Tagging experiments were carried out at several localities in West Norway.

Sprat. Special attention has been paid to the recruitment of the stock along the Norwegian coast. The distribution of sprat eggs and larvae during early summer has been studied. The echo-sounder has been used to locate shoals of 0-group sprat during autumn.

Scotland

(C. E. Lucas).

It has again been possible to maintain fairly regular observations in the northern North Sea, whilst at the same time undertaking regular work in those waters directly influencing conditions within the area.

Drift-bottle liberations in the Faroe-Shetland Channel and within the North Sea confirm the general sluggishness of the surface drift during 1950/51. Strandings on the British coast, which were notably absent in the immediate post-war years, continued the increase in numbers which began in 1949 and reached further south than in the two previous years. General plankton investigations continued in relation to the fisheries and special autumn cruises were made in the north-western North Sea to study the local autumn-spawned herring larvae.

For the first time detailed statistics of individual herring catches landed at Fraserburgh, Peterhead and Lerwick were collected through the summer season. They include details of place of fishing, total catch, number of nets etc. from each boat every day, whilst samples of the fish were also obtained. The trawled herring landed at Aberdeen were also regularly sampled. From April to September "Clupea" operated a detailed hydrography/plankton echometer survey of a large part of the north-east coast herring grounds, followed by a survey of the adjacent trawling grounds. Comparison has been made between the echometer traces and the detailed statistics obtained in the area, enabling the echo sounder to be used more reliably for recording the distribution and abundance of herring over the grounds. Herring tagging was increased considerably during the year and various types of tag were tried, including one which can be operated by one man. Recaptures ranged from the Fladen Ground to the East Anglian and Belgium fisheries.

Examination of the haddock stock is being continued and it is clear that the catches have now declined approximately to a stage corresponding to that in 1938. The fishing intensity has undoubtedly exceeded the level under which the stock should provide the maximum weight. Investigation and the tagging of plaice in the bays of the east and north coasts of Scotland have been continued, particularly to investigate the effect upon these stocks of the inshore fishing effort, and their relationship to those further off-shore. Research on lemon soles has been confined to the age analysis of the fish landed by research vessels. The examination of diseased and abnormal fishes and the recording of rare fishes have been continued throughout the year.

Bottom fauna investigations have continued, first in Aberdeen Bay and then over Smith Bank in the Moray Firth. A watch has been maintained on the lobster stocks and 500 lobsters were tagged and released off Burnmouth, 111 having been returned so far. In view of the widespread infestation of mussel stocks by *Mytilicola*, a preliminary survey of its distribution in Scotland has been made.

Experimental fishing during the year has included investigation into the relative efficiency of different types of Scottish creel, with a further comparison with the Cornish lobster pot. In trawling, experiments have been made to test the efficiency of different types of floats etc. and further mesh shrinkage experiments have been carried out. Other experiments included further determinations of mesh selection ranges, both in trawl and seine, and experiments with pelagic gear.

The Continuous Plankton Recorder survey, previously conducted from the Department of Oceanography, University College, Hull, and now from the Oceanographic Laboratory, Edinburgh (Scottish Marine Biological Association), has been continued as in previous years (see report to the Plankton Committee). The herring/plankton investigations from the same laboratory have been continued, in the closest collaboration with the herring investigations of the Marine Laboratory, Aberdeen.

Sweden

(A. R. Molander).

Fishing experiments (line fishery) and investigations of ling in the eastern and north-eastern part of North Sea (June).

Publications.

The following publications (other than those in the Council's series) have been reported during the year:—

Barnes, H.: "A Statistical Study of the Variability of Catches Obtained with Two Models of the Hardy Plankton Indicator." Hull Bull. Mar. Ecol., **2**, No. 16, pp. 283—293, 1951.

Carruthers, J. N., Lawford, A. L., Parrish, B. B., & Veley, V. F. C.: "Variations in Brood Strength in the North Sea Haddock in the Light of Relevant Wind Conditions." Nature, Lond., **168**, pp. 317—319, 1951.

Dannevig G.: "Sprat from Norwegian Waters. An Analysis of Vertebrae Counts." Reports on Norwegian Fishery and Marine Investigations, **9**, Nr. 12.

Parrish, B. B., & Craig, R. E.: "Sonic Layers in the Sea." Nature, Lond., **168**, pp. 472—474, 1951.

Rae, K. M.: "Continuous Plankton Records: Explanation and Methods, 1946—1949." Hull Bull. Mar. Ecol., **3**, No. 21, pp. 135—155, 1952.

Rees, C. B.: "Continuous Plankton Records: First Report on the Distribution of Lamellibranch Larvae in the North Sea." Hull Bull. Mar. Ecol., **3**, No. 20, pp. 105—134.

— "Continuous Plankton Records: The Decapod Larvae in the North Sea, 1947—1949." Hull Bull. Mar. Ecol., **3**, No. 22, pp. 157—184, 1952.

Stubbings, H. G.: "Continuous Plankton Records: Fish Eggs and Young Fish in the North Sea, 1932—1939." Hull Bull. Mar. Ecol., **2**, No. 15, pp. 277—281, 1951.

Wood, H.: "Scottish Herring Tagging Experiments." Fishing News, 2nd June, 1951, pp. 12—14.

Transition Area Sub-Committee.

1951

By Erik M. Poulsen

Denmark

(Erik M. Poulsen).

Hydrography.

Observations of temperature, salinity and oxygen of the sea water were made in connection with the experimental fishing.

Plankton.

The regular sampling of macroplankton (especially eggs and larvae of fish) from light vessels was continued. Hauls with the Hensen net were carried out in connection with the ring-trawl fishing.

Benthic Food.

Valuations of the sea bottom were carried out especially in areas where transplanted plaice were put out.

The Fish.

Eggs and Larvae. Quantitative fishing with the ring-trawl was carried out in late winter, in spring and in the autumn.

Flatfish. The densities of the 0-group (especially of plaice, flounder and turbot) were investigated by means of fishing with the Johansen young-plaice-trawl along the shores.

The densities of the various age-groups were investigated through the whole area inside the Skaw by means of hauls with the eel-tog and the cod-trawl. The cod-trawl was introduced for this research work, as catches with the small eel-tog were in many cases too small owing to the ever diminishing stock.

Samples of commercially caught flatfishes were investigated and market measurements were carried out at various ports.

Cod. The density of the stock and the strength of the various age-groups were investigated by means of hauls with the eel-tog and the cod-trawl.

Waste Fish. The research work carried out through recent years was continued.

Predictions of the yield of the mackerel and silver eel fisheries were given.

Crustaceans.

The investigations concerning the stock of deep-sea prawn and Norway lobster were continued.

Norway.

Statens Utklekningsanstalt, Flødevigen

(Alf Dannevig).

Hydrography.

Observations on the temperature and salinity of the sea water were taken every working day at Flødevigen at 0, 1 and 15 metres below the surface.

In the Skagerak and in the coastal waters up to Karmøy, 396 hydrographic stations were worked. In addition 114 surface samples were taken for temperature and salinity measurements.

The Fish.

Fish eggs and larvae. Material was collected from the Skagerak and the Oslofjord.

Gadidae. The 0-group. Experimental fishing with a land-seine in the littoral region was carried out according to the pre-war scheme; 74 hauls were made on the Skagerak coast and 57 in the Oslofjord.

Older fishes. Experimental fishing with traps was carried on at Flødevigen.

Herring. Samples of herring were collected from different parts of the Skagerak Coast.

Experimental rearing of cod, plaice and herring was successful. This year, however, some trouble was experienced evidently caused by the attack of bacteria and parasites.

Shellfish.

Lobster. Statistics from individual fishermen were collected according to the pre-war scheme.

The hatching had to be suspended. The rising costs exceeded the means available. Some experiments were undertaken to hatch lobster eggs taken from the female lobster.

Oyster. A satisfactory number of spat was collected in the artificial pond at Flødevigen.

Prawn Investigations (Birger Rasmussen).

For a considerable period of time the fishermen trawling for prawns outside the entrance of the Oslo Fjord have been of the opinion that certain measures of protection ought to be enforced. This protection is particularly needed for the fishery for deep-sea prawns in the deep submarine Channel called "The Hvaler Deep". The fishermen have in 1952 imposed upon themselves voluntarily a close season by forbidding prawn trawling in this region between 1. January and 1. August; in that period they catch large numbers of small prawns of little value. In order to study the effect of this protection and the need for such measures, Norway has instituted an investigation of the prawn population in this area. This investigation will take about 1 year, and it is hoped that we will be able to answer questions as to the influence of mesh size, closed and laced cod-ends, and as to the composition of the prawn population in different seasons.

The Biological Laboratory, University of Oslo (Johan T. Ruud).

During the spring, summer and autumn of 1951 eight cruises were undertaken with the R/V "Gunnar Knudsen" to the Dramsfjord,—which is a landlocked fjord with stagnant waters—in order to study the water circulation of the fjord and the production of plankton during one year. In each cruise a number of sections were taken from the open fjord (Breiangen) and in to the close vicinity of Drammen. The usual hydrographic observations were made, including determinations of dissolved nutrients. Plankton collections were made with Clarke-Bumpus plankton samplers in oblique hauls through 3 different water layers, viz. above, in and below the discontinuity layer.

Sweden.

Hydrography, see Hydrographical Committee.

The Fish (Arvid R. Molander).

Plaice. Experimental investigations were made of the effect of certain ecological factors upon the establishment of environmental forms of the plaice.

Sprat. The collecting of statistics as to the landing of sprats in various parts of the west coast was continued. The material collected in former years has been supplemented with hydrographic and meteorological data. The results have been worked up in a paper ready for print.

Collections of Statistical data of the landings of haddock, lemon sole, and plaice were continued.

Publications.

Blegvad, H.: Fluctuations in the Amounts of Food Animals of the Bottom of the Limfjord in 1928—1950. Rep. Dan. Biol. Stat., 53, 1951.

Dannevig, Alf.: Lobster and Oyster in Norway. Rapp. et Proc. Verb., **128**, 1951.

Poulsen, Erik M.: On the Crustaceans of Commercial Importance in Danish Waters. Rapp. et Proc.-Verb., **128**, 1951.

— Changes in the Frequency of Larger Bottom Invertebrates in the Limfjord in 1927—1950. Rep. Dan. Biol. Stat., 53, 1951.

Rasmussen, C. J.: Two Danish Finds of Female Eel (*Anguilla anguilla*) in Spawning Dress. Ibid.

Baltic Area Sub-Committee.

1951

By Chr. Hessle

Reports of work carried out have been received from Denmark, Finland and Sweden.

Denmark

(Aage J. C. Jensen).

The S/S "Biologen" worked in the Møen region in April, to the south of Scania and Bornholm in August and near Møen in October. The M/B "Havkatten" worked on the coasts of Seeland and Møen in August.

Biology.

Plaice, Flounder and Turbot. Quantitative fishing experiments were carried out with the Johansen young-fish trawl from the "Havkatten" on the coasts of Seeland and Møen and with hand-push-net at Bornholm. The stock of older fishes (also of the dab) was investigated by quantitative fishing from the "Biologen".

Cod. The stock of cod was also investigated in the said fishing experiments from the "Biologen".

Herring. Commercial catches were analysed as to length, age, maturity, racial characters etc.

Salmon. In January and February and in October, November and December measurements and age determinations of salmon caught commercially off the Gotlandic, Polish and Russian coasts were carried out.

Eggs and Larvae. Hauls with the Hensen-net and the ring-trawl were carried out on the cruise in April. Hensen-net hauls were also made in August.

Hydrography and Plankton.

Hydrographical and plankton observations were made during the cruises of the "Biologen". The fortnightly collections of hydrographical and plankton material at Christiansø were continued.

Finland

(T. H. Järvi).

Biology.

A biological and quantitative investigation of the fish population on the fishing grounds near Helsingfors was concluded.

Benthic Food.

Ecological investigations on the *Bosmina maritima* and on different *Gammarus* species along the Finnish coasts were continued.

Hydrography and Plankton (G. Granqvist).

Hydrographical material was collected at 19 fixed stations and 7 lightships. Surface observations of salinity and temperature were made on the Helsingfors—Copenhagen—Antwerp route.

Plankton samples were collected three times a month from Jungfruskär on the south-western coast of Finland and twice a month from the lightship "Helsinki" in the Bay of Finland.

Sweden

(Chr. Hessle).

The research vessel "Eystrasalt" was kept in commission from July to November and the cruises were extended from the Sound to the Gulf of Bothnia. The research vessel "Skagerak" made a cruise in the southern and central part of the Baltic in July.

Biology.

Measurements of **plaice** and **flounder** in commercial catches were carried out on the coast of Sweden.

Salmon. (See report to the Salmon and Trout Committee.)

Hydrography and Plankton.

Daily hydrographical observations were made from five lightships. In the latter part of the year two fixed stations were chosen for hydrographical observations in deeper water layers; one of these is situated at Landsort in the central Baltic, the other one at Ulvöhamn in the Gulf of Bothnia.

Hydrographical investigations were undertaken during the cruise of the "Skagerak" in July.

From the lightships "Hävringe" in the central Baltic, "Finngrundet" in the Bothnian Sea and "Norströmsgrund" in the Bay of Bothnia plankton samples were collected with Hensen-nets twice a month from August or September to the end of the year.

In the Bothnian Sea investigations have been undertaken as to the nature and extension of a disease on *Eurythemora hirundoides* which was observed for the first time in 1950.

Aids to Fishing.

The research vessel "Eystrasalt" has been commissioned principally for locating herring shoals with the echo-sounder and for fishing experiments.

COMITE ATLANTIQUE

1951

Par Jean le Gall

Le Rapport Administratif du Comité Atlantique pour 1951 fera état, pour la dernière fois, des recherches effectuées dans le Sous-Comité de la Méditerranée, dont le Conseil International pour l'Exploration de la Mer a décidé la suppression dès la reprise de l'activité de la Commission Internationale pour l'Exploration Scientifique de la Mer Méditerranée.

Désormais, ils ne seront cités que pour mémoire dans ce rapport d'activité, essentiellement consacré aux travaux effectués au large de la plateforme continentale eurafricaine et aux espèces pélagiques qui l'habitent (Clupéidés, Scombridés, Thonidés, Gadidés, etc.). Ils se retrouveront dans les Notes et Rapports de la Commission Internationale pour l'Exploration Scientifique de la Mer Méditerranée.

I. Hydrologie.

Angleterre
Belgique
Danemark
Portugal

Pas d'observations dans le secteur du Comité.

Espagne.

En Janvier et Février, le navire de recherches "Xauen" a effectué une campagne dans la Mer d'Alboran. Des sections hydrologiques comportant les observations habituelles (sondages, température, salinité, phosphates, oxygène) ont été faites le long des méridiens 2°00′, 2°30′ et 3°00′ W.

En Mars et Avril, au cours d'une autre campagne du "Xauen", de nombreuses observations hydrologiques (température et salinité) ont été faites le long des côtes est d'Espagne, autour des Baléares et dans la Mer d'Alboran, en liaison avec les recherches sur la sardine citées plus loin.

En Août et Septembre, le "Xauen" a fait des sections hydrologiques en Galice et dans le nord d'Espagne, le long du 43°00′ N. jusqu'au 11°33′ W. et sur les méridiens 8°00′, 6°00′ et 4°00′ W., depuis la côte jusqu'au 45°15′ N. environ. La plus riche des aires sardinières au NW. de Santander a été aussi prospectée.

Les observations hydrologiques (température, salinité, oxygène et phosphore) ont été complétées par des pêches de plancton.

Sur le trajet Cadix—Vigo, une série de stations côtières a été faite, comportant aussi les pêches de plancton.

Ecosse.

Pendant le mois de Juin et au début de Juillet 1951, le navire de recherches écossais "Scotia" a entrepris une croisière étendue d'hydrographie et d'investigations planctoniques à l'ouest de l'Ecosse et de l'Irlande jusque sur les principaux hauts fonds océaniques.

Quelques notes brèves sur cette croisière paraîtront dans les *Annales Biologiques*; le rapport détaillé sera publié ailleurs (C. E. Lucas).

France.

Au cours de l'année 1951, de Février à Juin, le navire "Président Théodore Tissier" a effectué des observations hydrologiques sur les trajets Brest—Madère, Antilles, Terre-Neuve, Açores—Cap Finisterre, Saint-Jean-de-Luz—Brest.

En Août—Septembre, la campagne a été poursuivie dans l'ensemble du Golfe de Gascogne et l'hydrologie du plateau continental a été particulièrement étudiée en zone côtière sur les pêcheries sardinières.

De nombreux dragages géologiques ont été également effectués, surtout dans la partie NE. du Golfe, ainsi qu'à la limite des deux vasières qui se sont révélées continues sous un placage de sable.

1500 bouteilles dérivantes ont été lancées pour l'étude des courants de surface.

Des sorties périodiques ont été faites dans la région du Pertuis Breton par le laboratoire de La Rochelle. Quelques observations ont également été faites dans le Pertuis d'Antioche. Plus de 250 observations (T° et S $^0/_{00}$) ont ainsi été effectuées.

Un résumé est publié dans les *Annales Biologiques*.

(R. Letaconnoux.)

Maroc. Quatre campagnes océanographiques en Février, Mai, Août et Novembre, ont été faites par l'Institut des Pêches Maritimes avec les avisos de la Marine Nationale et le navire garde-pêche dans la zone du plateau continental marocain entre le Cap Spartel et le Cap Ghir, ainsi qu'entre le Cap Ghir, le Banc Conception, les îles Canaries et le Cap Juby.

La température a été observée et des échantillons d'eau de mer prélevés en vue d'analyses, aux profondeurs de 5, 10, 25, 50, 100, 200 et 400 m. le long de seize lignes perpendiculaires à la côte, à raison de 4 à 8 stations par ligne. (J. Furnestin.)

Sénégal. Le Service technique des Pêches a fait des relevés de température sur la côte du Sénégal. (E. Postel.)

Irlande.

Pas d'observations au large. Continuation des relevés de températures de surface à bord du bateau feu "Conigsbeg".

II. Plancton.

Belgique
Danemark
Grande-Bretagne
Irlande
Portugal

Pas d'observations dans le secteur.

Espagne.

Près de 200 échantillons de plancton ont été prélevés par le "Xauen" au cours de ses campagnes en Méditerranée et en Atlantique. Les recherches ont visé surtout le repérage d'œufs et de larves de Clupéidés.

Les laboratoires atlantiques et méditerranéens ont poursuivi la récolte et l'étude du plancton côtier.

France.

Des pêches planctoniques ont été faites, à chaque station, en surface et en profondeur, au cours des campagnes du "Président Théodore Tissier" en Atlantique et en Manche. Elles ont été complétées par des pêches faites sur les frayères de sardines à l'entrée occidentale de la Manche et sur le littoral.

Maroc. 250 échantillons de surface ont été prélevés entre Tanger et le détroit canarien au cours des quatre campagnes trimestrielles d'océanographie. 85 autres échantillons ont été pêchés en divers lieux et, notamment, dans les zones de ponte de la sardine et de l'anchois. Ce matériel est étudié au laboratoire de l'Institut des Pêches Maritimes.

III. Bathymétrie et Sédiments.

France.

Le navire océanographique "Président Théodore Tissier", au cours de ses campagnes de 1951, a procédé à des sondages ultrasoniques sur les hauts fonds entre Madère et les Antilles, autour des Antilles françaises, dans les parages de Terre-Neuve et aux Açores. Au total, 160 échantillons de fond ont été recueillis.

Maroc. Quatre séries de sondages par appareil ultrasonore et six dragages ont été faits entre la côte et le talus du Plateau dans le secteur nord du Maroc français, entre l'oued Sebou et la frontière.

Rio de Oro.

Les services espagnols ont mis au point une carte des fonds.

IV. Biologie.

A. Clupéidés.

La Sardine (*Sardina pilchardus* Walb.).

Angleterre. La longueur, l'âge et la maturité sexuelle des sardines ont été étudiés sur 150 individus prélevés en Mars 1951 sur les pêcheries de Cornouailles anglaise.

La détection des bancs de sardines a été faite en Octobre 1951 sur les pêcheries de la côte sud de Cornouailles. Des bancs importants ont été détectés et les observations faites ont montré que ces bancs étaient constitués par des sardines d'été de petite taille, âgées de 2 et 3 ans, avec peu de graisse intestinale et les gonades aux stades I et II.

Les sardines d'hiver, de grande taille, âgées de 5 à 7 ans, avec beaucoup de graisse intestinale, les gonades aux stades III et IV, apparurent en fin d'Octobre, plus tard que d'habitude.

Espagne. L'étude d'échantillons de sardines prélevés sur les pêcheries a été poursuivie par les laboratoires de St-Sébastien, Santander, Vigo, Malaga, Castellon et Palma de Majorque.

Du matériel d'autre provenance a été étudié lors des campagnes du "Xauen".

Les recherches planctoniques ont donné d'intéressants résultats sur la répartition des œufs et des larves de sardines à Santander et en Méditerranée.

France. Au cours de la campagne du navire "Président Théodore Tissier" dans le Golfe de Gascogne, plus de 1150 sardines recueillies sur les diverses pêcheries ont été examinées et 4240 marquées selon la technique décrite dans le *Journal du Conseil* (Vol. XVII, n° 3, p. 264).

1115 sardines capturées aux abords de La Rochelle ont été également examinées, de Juillet à Octobre. Ces observations, qui montrent de profondes modifications de l'œcologie de la sardine dans cette région, sont publiées dans les *Annales Biologiques*.

Algérie. Observations biométriques sur la sardine algérienne. (Dr. Dieuzeide et J. Roland.)

Maroc. L'Etude biométrique de la sardine (*Sardina pilchardus* Walb.) a été systématiquement poursuivie. Les aires de ponte ont été localisées. Le comportement de la sardine en fonction de la température et des courants a été observé à l'occasion de recherches techniques sur la pêche. (J. Furnestin.)

Portugal. Reprise de l'examen régulier d'échantillons prélevés une ou deux fois par semaine sur les bateaux de pêche de Leixoès et de Lisbonne. Observations biométriques habituelles.

B. Autres Clupéidés.

Espagne. Observations habituelles sur la sardinelle (*Sardinella aurata* Cuvier) et l'anchois (*Engraulis encrasicholus* L.) en Méditerranée.

France. L'étude biométrique de l'alose (*Alosa alosa* L.) est entreprise en France et au Maroc, ainsi que celle de l'anchois (*Engraulis encrasicholus* L.). Les aires de ponte de cette espèce ont été localisées au Maroc. Une étude de la croissance de l'alose du pays basque a été entreprise. (Dr. P. V. Creac'h.)

Au **Maroc**, des observations régulières ont été faites sur la biologie et le comportement de l'alose. Une étude de la sardinelle (*Sardinella maderensis* (Lowe)) est en cours.

C. Scombridés.

La biologie des deux espèces de maquereaux du Maroc: *Scomber scombrus* et *Scomber colias* a fait l'objet d'observations suivies.

D. Thonidés.

France. Germon (*G. alalunga*). Plus de cent germons ont été capturés, examinés et mensurés au cours de la campagne du "Président Théodore Tissier". Des mensurations ont également été faites au débarquement. Une étude est en cours sur les possibilités de détermination de l'âge d'après l'examen des vertèbres. (R. Letaconnoux.)

Thon rouge (*Thunnus thynnus* L.). Des mensurations et l'étude de la correlation Taille/Poids ont été faites au cours de la saison de pêche (Avril—Octobre) à Saint-Jean-de-Luz.

Au **Maroc**, la pêche du thon rouge (*Thunnus thynnus* L.), formes juvenile et adulte, celle de la bonite (*Katsuwonus pelamys* L.), du patudo (*Parathunnus obesus* (Lowe)) et du melva sont régulièrement suivies.

E. Gadidés.

Morue (*Gadus callarias* L.).

France. Des observations hydrologiques et des pêches de plancton ont été faites à bord du "Président Théodore Tissier" et de "l'Aventure" sur les pêcheries de Terre Neuve et du Groënland. Les études biométriques habituelles ont été faites sur ce poisson.

Merlan (*Gadus merlangus* L.).

France. Etude comparée de la croissance et de la 1ère maturité sexuelle du merlan en Manche Orientale et à la côte sud de Bretagne. Ce dernier a une croissance plus rapide; sa 1ère maturité sexuelle se présente à une taille plus petite et à un âge plus précoce qu'en Manche Orientale. (P. Desbrosses.)

Merlu (*Merluccius merluccius* L.).

Les résultats des recherches faites au cours de l'année 1951 feront l'objet d'un Deuxième Colloque du Merlu lors de la Réunion du Comité Atlantique.

Belgique. Mensurations régulières hebdomadaires de 300 à 400 kilogrammes de merlus débarqués à Ostende provenant du Canal de Bristol et du Moray Firth.

France. Du matériel a été recueilli en vue de comparer l'espèce européenne avec *M. bilinearis* de l'Amérique du Nord. Les formules radiaires et le nombre de branchiospines présentent des différences notables. (R. Letaconnoux.)

Portugal. Etude biométrique comparative de *Merluccius merluccius* L. et du merlu noir (*Merluccius senegalensis* Cadenat) des côtes de Mauritanie. Examen des otolithes et des gonades.

F. Poissons Divers.

Irlande. Continuation des recherches sur le saumon, la truite (voir Comité du Saumon et de la Truite).

La présence de saumons capturés en surface sur les pêcheries de maquereaux à l'ouest et au nord-ouest d'Ouessant a été confirmée par la capture d'un jeune saumon "marqué" dans l'Adour (voir Comité du Saumon et de la Truite).

Espagne. Etude au Laboratoire de Saint Sébastien du balaou (*Scombresox saurus*) du fond du Golfe de Gascogne.

Etudes biologique et biométrique du "rasoir" (*Xyrichthys novacula*) à Palma de Majorque.

France. Continuation des recherches sur le saumon. Marquages sur le balaou (*Scombresox saurus*) et sur diverses espèces de dorades.

En **Algérie**, les caractères ichthyologiques des raies ont été étudiés.

Au **Maroc**, les recherches sur les Sparidés (R. Coupé), les Mugilidés (M. Rossignol), les Gadidés et Merluccidés (C. Maurin), les Carangidés (R. Gail) ont été continuées.

L'étude des œufs et larves de poissons récoltés dans le plancton a été poursuivie (Marie-Louise Faure).

En **Afrique Occidentale Française**, les espèces sénégaliennes et du Golfe de Guinée sont étudiées par les laboratoires de l'I.F.A.N. et du Service technique des Pêches.

Un important ouvrage sur les poissons de mer du Sénégal a été publié par Jean Cadenat.

G. Mollusques.

France. Continuation des recherches sur la coquille Saint Jacques (*Pecten maximus*) en rade de Brest. (J. le Gall.)

Etudes du pétoncle (*Chlamys varia*) et du vanneau (*Pecten opercularis*) en rade de Brest et sur les lieux de pêche voisins de La Rochelle. (J. Audouin et R. Letaconnoux.)

Plus de 14,000 coquilles ont été mesurées; 700 marquées.

Un résumé est publié dans les *Annales Biologiques*.

Irlande. Une étude du stock de coquilles Saint Jacques (*Pecten maximus*) est en cours sur les différents lieux de pêche sur les côtes d'Irlande. Ses recherches ont été étendues aux huîtres (*Ostrea edulis*) et au bigorneau (*Littorina littorea*).

Espagne. Visite des parcs à moules de la Méditerranée en Mars—Avril; le degré d'infestation des moules par *Mytilicola intestinalis* a été fixé. Recherches sur la Mytiliculture à Barcelone.

H. Crustacés.

Observations sur la distribution, la biologie et la pêche des crevettes profondes.

En **Afrique du Nord** et au **Maroc**, recherches sur la systématique et la biologie des "crevettes" marocaines. Une espèce nouvelle d'Hippolytidés (*Lysmata unsicornis*) a été décrite par MM. Holthuis et Maurin.

I. Algues Marines.

Espagne. Prospection des champs d'algues d'intérêt industriel sur les côtes des Canaries et du Sahara espagnol.

France. Prospection des champs d'algues des côtes de Bretagne et du Cotentin. Préparation d'une carte algologique.

Sous-Comité de la Méditerranée Occidentale.

1951

Par H. Heldt

I. Travaux à la Mer.

Espagne.

Voir Comité Atlantique.

France.

Laboratoire Arago (Banyuls).

Doté d'un nouveau navire de recherches "Professeur Lacaze Duthiers", le laboratoire Arago a pu effectuer près de 100 stations hydrologiques sur les côtes du Roussillon.

Station Maritime d'Endoume (Marseille).

Les recherches se sont poursuivies dans la région de Marseille.

Station Océanographique d'Antibes (C.R.E.O.).

Etude des courants littoraux dans la région de Nice et des remontées d'eaux profondes. Etude des marées (marégraphes de Nice et d'Antibes). Observation de la houle (Cap Ferrat et phare du Planier). Organisation de lancements de bouteilles dérivantes par les paquebots en vue de l'étude des courants dans le bassin de la Méditerranée Occidentale (400 bouteilles récupérées).

Installation à bord de 13 paquebots des lignes régulières, de thermographes. Ces observations permettront l'établissement de cartes mensuelles d'isothermes sur un réseau couvrant la Méditerranée de Gibraltar au détroit de Sicile.

Algérie. L'escorteur de la Marine "Cimeterre" a recueilli une soixantaine d'échantillons d'eau de 0 à 2,000 m. dans les régions de Minorque—Toulon—Ile d'Elbe—Naples. L'examen de ces échantillons et de 35 autres prélevés par le "Professeur Lacaze Duthiers" dans le Détroit de Gibraltar et 110 prises du "Crisia" en baie d'Alger, a permis au Pr. Bernard de compléter les résultats de son étude du courant atlantique.

Tunisie. Les stations effectuées par les escorteurs de la Marine ont fourni au Commandant Guyot des données pour une étude des déplacements d'eau dans le Canal de Sicile.

L'Ingénieur Hydrographe George a accompli en Tunisie une mission ayant pour objet l'étude des marées et courants—mesures magnétiques—déplacements des bancs de sable.

Un marégraphe enregistreur a été mis en place à Adjim.

II. Plancton.

Voir le rapport du Comité du Plancton.

III. Sédiments Marins.

Algérie. 55 échantillons de fond ont été prélevés par carottiers de 85 cm. sur lesquels ont été dosés l'azote et la carbone organiques, Phosphore, Calcium. Les Foraminifères et les Coccolithophorides sont étudiés ainsi que les Bactéries des vases.

Tunisie. Une étude de Cl. Francis-Bœuf, Romanovsky et Cl. Lalou a indiqué les caractéristiques de sédiments marins du golfe de Gabès.

IV. Etude Biologique des Fonds.

France.

Laboratoire d'Endoume. Une carte des fonds du Cap Couronne à Cassis a été établie.

Les rapports qui existent entre les fonds dits "de gravelle" et les fonds dits "Coralligènes" et les faunes caractéristiques des uns et des autres ont été mis en relief.

Les recherches faunistiques ont donné lieu à de nombreuses publications (Hydroïdes, Annélides, Bryozaires, Ascidies, Crustacés).

V. Biologie.

Clupéidés.

Espagne. L'étude a été poursuivie aux laboratoires de Malaga, Castellon et Palma de Majorque, d'échantillons de sardines de ces régions, ainsi que des sujets d'autres provenances recueillis lors des campagnes du "Xauen". D'intéressantes données sur la répartition des œufs et des larves de sardines ont été tirées des recherches planctoniques. Les observations habituelles sur l'anchois et la sardinelle de Méditerranée ont été continuées.

France. Le Laboratoire Arago a entrepris des recherches sur l'époque et les zones de ponte de la sardine sur les côtes du Roussillon, sur la biologie et le comportement écologique de ce poisson.

Plus de 1,000 exemplaires provenant des principaux centres de pêche ont été étudiés (taille-âge-croissance-caractères morphométriques et méristiques). Pour un certain nombre d'entre eux, le contenu stomacal a été examiné quantitativement et qualitativement, ainsi qu'ont été notées les variations pondérales et saisonnières en rapport avec la variation saisonnière du plancton de la région.

Thonidés.

Algérie. Des larves de thon rouge récoltées dans le plancton au large des côtes algériennes ont été décrites par le Dr. Dieuzeide confirmant le fait que la fraie s'effectue en haute mer.

Mugilidés.

France. Des recherches ont été mises en train au Laboratoire Arago sur la croissance des muges (*M. cephalus*, *M. capito*, *M. saliens*, *M. chelo*, *M. auratus*). Une centaine d'exemplaires ont été marqués en vue de l'étude des migrations.

Autres Espèces.

Espagne. Le laboratoire de Palma de Majorque va publier une étude biologique et biométrique sur le "rasoir" (*Xyrichthys novacula*).

VI. Mollusques et Crustacés Comestibles.

Espagne. Le degré de contamination des moules des parcs de la côte méditerranéenne d'Espagne, par *Mytilicola intestinalis* a été fixé en Mars—Avril.

Tunisie. Le parc d'épuration de la Station Océanographique de Salammbô a traité en cours d'année 107,350 Kgs. de coquillages (huîtres, moules, palourdes). Des observations sur les époques et les modalités de la ponte ont pu être faites.

Il a été noté le pourcentage de sujets parasités par *Mytilicola* sur des lots de moules de diverses provenance (côtes d'Atlantique et de Méditerranée françaises, côtes d'Italie).

Un parc d'élevage d'huîtres et de moules a été installé dans le lac de Bizerte.

VII. Eponge et Spongiculture.

Tunisie. Un parc d'essai de spongiculture a été créé à Djerba et a commencé des expériences en Mars 1950. En Décembre 1951, il ne subsistait rien des 5,000 boutures mises en place suivant la méthode dite "japonaise" et avec les fils (aluminium) recommandés. Des essais se poursuivent avec un matériel nouveau. La Station d'Essai est, depuis le 1er Janvier 1952, rattachée à la Station Océanographique de Salammbô.

PELAGIC COMMITTEE

Herring Sub-Committee.

1951

By Árni Friðriksson

I. Atlantic Waters.

Iceland

(Árni Friðriksson).

During the period 14. April—7. May a cruise was made on "Maria Julia" during which planktonic herring larvae were collected off the south and west coasts of Iceland. Further, two cruises were made in order to locate herring shoals by means of hydrographical and plankton investigations, echo-soundings etc. One of the cruises was made by "Maria Julia" off the west and north coasts during 22. June—9. July, the other by a chartered vessel, "Faxaborg" in July, north and east of Iceland.

Work to trace localities of herring spawning (during the spring) from records of the occurrence of spawny haddock was continued. Five loci were recorded off the western part of the south coast, during the period from 9. April—28. June.

For the purpose of herring tagging a small motor-boat "Svanholm", 15 br. reg. tons, was bought at the beginning of the season[1]). 3065 herrings were tagged (internal tags) during July and August, and 17 tags were returned from the reduction-plants. 11 of them originated from Icelandic tagging experiments, 5 were from Norway and 1 from the ocean east of Iceland (Norwegian tagging).

During July and August 2600 north-coast herrings were examined with regard to length, sex, maturity and intestinal fat. The total number of vertebrae (VS) was counted and scale-samples were collected for determination of age and type etc. The food content of 300 herring stomachs were examined.

During the period July—November 4800 herrings from the south and west coasts were examined and otoliths were collected for racial investigations.

Denmark

(Å. V. Tåning).

The Danish part of the international herring programme in the waters between Norway and East Greenland was carried out from 7. June to 1. July and again from 19. November to 13. December. During June the area north and north-east of the Faroes (62° N. Lat. to 64°20′ N. Lat. and 2° W. Long. to 7° W. Long.) was covered with several sections on which 75 hydrographical stations were worked; on about 30 of these stations the Hensen net was used. The relation between herring shoals and isotherms was studied (Bendix or Atlas echo-sounder was used constantly along the sections operated). The sections in the herring area investigated covered a distance of about 1200 naut. miles. A sample of herring (300 specimens) was analysed; 98% were of the Norwegian —Icelandic tribe, and 2% were of a summer spawning herring. The fishery however was poor during June, this being due particularly to bright weather. Experiments were carried out on the sensitivity of the Bendix and Atlas echo-sounders; a single suspended herring could be observed 40—50 m. below the stopped vessel, but not when the ship was at full speed (about 10 knots); presence or absence of the air bladder was of no importance for registration on the echo-meter.

During the cruise in November—December the weather was very stormy, but the survey of the area north and north-east of the Faroes (between 2° E. Long. and 9° W. Long.) was carried out according to programme. Herring were found only on 4.—5. December in the "cold tongue" of the East Iceland polar current where they were present in enormous quantities. Drift-bottles were liberated all over the area.

A sample of herring from off the Norwegian coast (1. March, 1951) was analysed for length, age, maturity and race.

[1]) Unfortunately the boat was lost on its way to home port from N.-Iceland after having finished the taggings.

Norway

(Finn Devold).

General Work.

During 1951 the general work of securing samples for studying fluctuations, length, weight, Vert. S., maturity etc. were continued. Special cruises for herring investigations were undertaken. The herring shoals approaching the Norwegian coast for spawning purpose were followed on their route for the last 300 miles. Further, a cruise from 23. June to 1. September was undertaken, and by use of ASDIC it was possible to locate the herring over extensive areas, from the Faroe Isles to east of Iceland and farther north to 73°. On the 22. November, "G. O. Sars" again left Bergen to endeavour to locate the herring shoals on their spawning migration to the Norwegian coast. The shoals were found about 130 n.m. north of the Faroe Isles, and were later followed till they reached the coastal waters 22. Januar 1952.

Tagging Experiments (Olav Aasen).

During the large herring season 10,250 herrings were tagged with internal tags at 3 localities (16. January —7. February). In the spring herring district at one locality 9,986 herrings were tagged with internal tags, 674 with external tags and 305 with internal and external tags (28. March—12. April). During M/S "G. O. Sars" summer cruise 1502 herrings were tagged 28. June at 63° 43′ N. Lat., 02° 52′ W. Long. and 510 herrings at 66° 07′ N. Lat., 10° 25′ W. Long. 16. August. Total tagged 23,277.

Recaptures in 1951 from taggings in:

1948 Norw. Spr. h.	1948 Icel. Sum. h.	1949 Norw. Spr. h.	1950 Norw. Large h.	1950 Norw. Spr. h.	1950 Icel. Sum. h.	1950 G.O.Sars Sum. h.	1951 Norw. Large h.	1951 Norw. Spr. h.
13	7	24	16	9	10	2	359	4

Total recaptured 444.

Special Investigations (Olav Aasen).

The work on a local herring stock in the Sognefjord was continued. 36 samples of herring comprising 1729 specimens were secured at intervals during the year. These were examined as to length, weight, maturity, sex, weight of gonads, Vert. S., and age. A report on the first years work on the Lusterfjord herring has been issued.

II. North Sea and Adjacent Waters.

Denmark

(Å. V. Tåning).

Herring work was carried out in the North Sea whenever possible during the year.

Stramin net hauls for the capture of herring larvae were carried out in June, July and November. In November (16.—17.) a series of hauls was made between the Skaw and 56°30′ N., 5°40′ E. About 1000 herring were tagged in the Fladen Ground area from "Jens Væver" between 31. August and 14. September, and one of these was recaptured off the Skaw in December. About 4000 herring were measured (average size about 29 cm.) and samples for age assessment etc. were obtained. The herring were more scattered in the area than in 1950.

Several herring samples were also obtained from the Clay Deep area ("Bløden" ground). Moreover, samples were obtained from the Danish Waddensea area; also including some of herring spawning in this area.

In the inner Danish waters the distribution, length and quantity of herring larvae was investigated by fishing from S/S "Biologen" with the 2 m. ring-trawl in February—May in the Kattegat and the Belt Sea, and in October in the southern Kattegat and the Belts.

16 samples of adult herring from the commercial fisheries in the Skagerak, Kattegat, Belt Sea and the Baltic (also from Bornholm) were analysed during the year. Also 21 samples of small herring (for processing) from the Skagerak, Kattegat and Belt Sea with adjacent fjords were analysed.

Tagging of a total of 800 herrings was carried out in April—May at south-east Funen, North-Seeland and in the Limfjord.

Commercial catches and some few research vessels' catches were analysed for length, age, maturity and race: of these samples 1 was from the west coast of Norway (1/3 1951), 3 from the southern North Sea, and ca. 50 from Skagerak and the inner Danish waters.

Sweden

(Hans Höglund).

In 1951 (11. April—9. May) 1663 herrings were tagged with the Lea tag in the skärgård of northern Bohuslän. Up to the end of March 1952, 182 of these had been recaptured.

In late August and early September 465 fishes were tagged on the Fladen Ground area, of which only 3 have been recovered.

The recoveries of the 1816 fish tagged at northern Bohuslän in 1950 have increased to 216.

From the first tagging experiment in March 1949 the 23rd recovery was made in November 1951.

During the spawning season (March—April) an investigation of the spring herring within a restricted area in the skärgård of the northern Bohuslän was started. Continuous hydrologic and meteorologic observations were made. The spawning grounds were investigated for spawn in order to establish the duration of the incubation. Artificially fertilized herring eggs were kept at different depths and the incubation at different temperatures was studied. In addition the commercial fishery in the area was followed and samples of spawning herring were analysed.

Samples from the Swedish herring fishery in the Skagerak and the North Sea have been analysed throughout the year. About 5000 herring were examined in all.

Scotland

(H. Wood).

In January "Clupea" made a short survey in and around the Firth of Forth without finding evidence of any appreciable recovery in the stock of adult herring which spawns in this region during the early months of the year.

During the period April to mid-September, "Clupea" was engaged in an intensive survey and sampling programme of north-east Scotland, between latitude 57° and 58°30′ N. and from the coast to longitude 0°20′ W. Echo-sounding surveys, in which the "Silver Quest" on loan from the Herring Industry Board collaborated, were made in alternate weeks and the distribution of the shoals, as revealed by echo-sounder, was charted against the distribution of the drifter fleet. This was made possible by collecting daily at the chief ports details concerning each catch landed. Sampling was also carried on daily at the chief ports and the combined data relative to grounds, effort and catch, are being used in investigations of the population dynamics and biology of the separate herring types.

From mid-September until mid-December "Clupea" was engaged in echo-meter, plankton and hydrographic surveys on the Scottish west coast and in the Clyde estuary.

Tagging experiments were carried out on a much more extensive scale than in 1950, mainly on commercial drifters. A total of 7,670 herring were tagged off Shetland and the Scottish north-east coast and 117 valid recaptures have been recorded, including 10 from Dogger Bank area, 1 from off East Anglia, 1 from off Ostend, and 1 from the Skagerak. On the Fladen Ground 122 herring caught in "Explorer"s trawl were tagged but so far no recoveries have been made.

Sampling of the herring shoals in the Minch area was undertaken for the first time since the war, and in this region 935 herring were tagged between June and September and so far have provided only 4 recaptures.

In addition to sampling the shoals of adult herring opportunities have been taken to sample, mainly for purposes of race identification, herring of the 0 and I-groups on the Scottish east coast.

Preliminary experiments have been made in underwater photography using a Robot 35 mm. camera and a super-charged 1,000 Joule electronic flash tube. The equipment is designed for depths up to 80 metres although as yet experiments have not been attempted beyond depths of 30 metres. The available light is adequate for normal photography up to a range of 11 feet and up to 7 feet for colour photography.

Photographs of the sea floor of high quality and mid-water photographs of fish sufficient for identification have been obtained.

Publications.

Craig, R. E.: The Scottish Programme of Herring Hydrography 1951. Rapp. et Proc.-Verb., **131**, pp. 108—110.

Holland

(B. Havinga).

Herring research was directed towards 2 major questions:

1. The use of echo-sounders in trawl and drift-net fisheries.

2. The influence of fisheries upon the herring stock in the North Sea.

For both purposes samples were taken and analysed on length, age, sexual maturity and race characters.

It was attempted to get an insight in the behaviour of herring in both types of fisheries and in the influence of the characters mentioned as well as of external factors on this behaviour.

The work was especially carried out during July in the North Shields area. Samples were taken by the motor research vessel "Antoni van Leeuwenhoek" with drift-net and trawl. Different kinds of echo sounders were almost continuously in use. Hydrographic and plankton data have been collected.

Belgium

(Ch. Gilis).

1. During 1951, the study on the herring concentrations exploited by the Belgian herring trawlers has been continued.

(a) The full-herring concentrations of the northern and central areas of the North Sea, from August till October (1,044 herrings).

(b) The spent-herring concentrations on the Belgian and French coasts

i) in January, end of the season 1950—51, 376 herrings;

ii) in December, beginning of the season 1951—52, 325 herrings.

The observations cover all biological characters: length, weight, sex, stages of maturity, fat, age, vertebrae, keeled scales (K_2), stomach contents. A detailed study of the activity of the herring trawlers was also made.

2. During the two inspection cruises (August and September) of the fishery inspection vessel "Lieutenant Victor Billet", water samples were collected on the herring grounds of the northern and central areas of the North Sea (i. e. Fladen Ground—Gut—Dogger Bank).

3. Spent-Herring Fishery. Water samples were taken on the spent-herring grounds (mainly off Dunkirk) during the months of February and December whilst herring tagging experiments were in progress.

4. Herring Tagging Experiments. These experiments were carried out aboard the fishery research vessel "Hinders" in collaboration with the Fisheries Laboratory of Boulogne (France).

Owing to the late beginning of the experiments only 104 herrings were tagged in February (season 1950—51). During the season 1951—52 (December) 815 herrings were tagged (mainly off Dunkirk).

France

(J. Ancellin).

L'étude des populations de harengs du sud de la Mer du Nord et de la Manche Orientale a été poursuivie durant les hivers 1950—51 et 1951—52.

Elle a porté au cours de l'année 1951 sur la taille, l'âge, le stade sexuel et la moyenne vertébrale de 700 individus.

Des marquages de harengs ont été réalisés en collaboration avec les Belges, à bord du chalutier de recherches belge "Hinders", au début et à la fin de 1951 sur les Bancs des Flandres. 715 harengs ont été marqués du 17 au 23 Décembre 1951.

England

(D. H. Cushing).

During 1951, the examination of the east coast shoals has continued. At Shields 1700 fish were dealt with and at Whitby 2300 fish were examined. The work at Whitby was accompanied by echo survey from M. V. "Platessa".

At Lowestoft and Great Yarmouth 3100 fish were examined providing material for the yearly forecasts, in addition 82,052 fish were measured on the market.

Tagging of the East Anglian shoals was started on the spawning grounds at the end of the season. Work has been started on the herring otolith; work on the polymodal distribution of L_1's has continued. Larval surveys were attempted during the winter of 1951—2. New echo sounders have been tried out successfully.

The research ships "Sir Lancelot", "Platessa", and "Onaway" have taken part in this work.

SALMON AND TROUT COMMITTEE

1951

By Sven Sømme

Denmark

(E. M. Poulsen and Knud Larsen).

1. Biological Investigations.

The biological and ecological investigation of streams was continued as usual, and scales and stomach contents of trout from the sea and some streams were collected and partly analysed. The investigations by means of electric fishing were carried on in small trout streams. Markings of sea trout were performed in 3 places: 1) in the mouth of the river Øleå at Bornholm (61 kelts), 2) in the mouth of the river Lindenborg å in the northern part of Jutland (24 silvery trout (finnocks), 22 smolts, 22 kelts and 13 trout without particulars) and 3) in the mouth of the Randers fjord in east Jutland (3 silvery trout). All these trout were tagged with celluloid tags in the dorsal fin. In the tributary Brandstrup brook to the river Gudenå 65 trout parr were marked by fin-cutting (removal of the right pelvic fin). Transference of trout from freshwater into brackish water was performed also in 3 places: 1) from some tributaries to the river Gudenå into Randers fjord at Mellerup (436 brown trout and trout parr, which were marked by fin-cutting (left or both pelvic fins) or tagged with celluloid tags), 2) from a small hatchery pond in the river Blykobbe å into the Baltic at the west coast of Bornholm (312 sea trout fingerlings, marked by removal of both pelvic fins) and 3) from a trout-pond farm in southern Jutland into the sea near Køge in eastern Seeland (about 2000 $1^1/_2$ year old brown trout, 14—22 cm., of which about 1600 were tagged with celluloid tags and the remainder marked by cutting away the right pectoral fin).—The investigations into the food of the pike in trout streams were continued.

In the Baltic, experimental fishing for salmon was carried out from the M/S "Jens Væver". Part of the salmon caught were tagged, and measurements and scale samplings were undertaken.

2. Artificial Propagation.

As usual, hatchery operations were carried out at a number of centres by various fishing clubs and a few power stations, partly with support from public funds and partly recompensed by the permission to catch salmon and trout during the ordinary close season. Fry and fingerlings, especially of sea trout, were liberated in rivers with free access to the sea or in estuaries. The production of trout fingerlings in some ponds in the northern part of Jutland has been studied.

3. Statistics.

The collection of information about the yield of the salmon and sea trout fishery as well as the weight of individual salmon and sea trout in different waters was carried on as usual.

4. Publications.

Larsen, Knud: Om geddens (*Esox lucius* L.) føde i vandløb. (English summary: On the food of the pike (*Esox lucius* L.) in streams). Sportsfiskeren, No. 2, 1951.
— Mærkning af havørred i Lindenborg å. Ibid., 3, 1951.
— Vore ørreders vandringer i havet. Ibid., 6, 1951.
— Hvad æder havørreden i saltvand? Ibid., 12, 1951.

England

(F. T. K. Pentelow.)

In 1951 the tagging of salmon in the sea was, in accordance with the decision of the Committee at Edinburgh in 1949, carried out on the coast of South Wales to investigate stocks of salmon in the Irish Sea. A new site, about 30 miles north-east than of that fished in 1950, was chosen but results were still disappointing and only 25 salmon and 69 sea trout were tagged and released. Of these only 4 sea trout were recovered, all from rivers discharging into Cardigan Bay.

The investigation of the sea trout stock of the southern North Sea was continued and 3930 sea trout smolts and 54 sea trout migrating down the River Coquet were tagged. The staff of the Scottish Home Department collaborated by tagging sea trout smolts in the River Tweed. Tagged fish from both rivers have been recovered both from the East Anglian and Dutch coasts.

Finland

(T. H. Järvi).

The following numbers (in thousands) of salmon fry and one-summer-old parr have been liberated:—

	River					
	Oulu		Kemi		Sweden Kokemäki	
Year	Fry	Parr	Fry	Parr	Fry	Parr
1951	191.0	16.5	65.0	7.0	4.0	—

France

(R. Vibert).

1. Recherches Physiologiques et Biologiques.

Les recherches entreprises sont poursuivies. Les travaux de marquage ont commencé en Avril 1951 par le marquage d'un millier de smolts de saumons.

2. Propagation Artificielle du Saumon.

Faible récolte d'œufs en 1951—1952 (100,000).

3. Prises de Saumons.

Relativement peu importantes en 1951.

4. Publications.

Fontaine, M.: Remarques sur certains comportements du saumon. Bull. Fr. Pisc., No. 160, pp. 85—88.

— Sur la diminution de la teneur en chlore du muscle des jeunes saumons (smolts) lors de la migration d'avalaison. C. R. Acad. Sci., **232**, pp. 2477—79.

Holland

(G. J. Lienesch).

No investigations were carried out in 1951.

It appeared that catches of salmon in the Rhine continued to decrease due to decrease of the stock. Hatchery work was continued on a small scale at Baden.

Ireland

(A. E. J. Went).

Biological Investigations.

During 1951 investigations were again carried out, on a small scale, into the age and growth of salmon from the River Shannon. In addition a small amount of material relating to other rivers was examined. Salmon tagging was again carried on in a number of places around the Irish coasts. Tagging was repeated at the Baginbun, in County Wexford in the south east of Ireland and at Rath on the northern shore of Kenmare Bay. A new station was opened at Streedagh, County Sligo.

The results from Baginbun were in the main similar to those obtained in the previous two years. There were, however, unlike the previous years, a relatively large number of fish recaptured in the River Slaney towards the east and, in addition, long distance recaptures were made, one in the Dundalk River on the east coast of Ireland and the second in the River Tay on the east coast of Scotland. The latter recapture was over 800 miles (almost 1,300 kilometres) from the place of tagging. This is the farthest distance which a fish tagged in Ireland has been recorded as travelling since the investigations commenced in 1948.

Fish tagged at Rath and released indicated similar movements to those recorded in the previous year, that is to say, in the main into rivers flowing into Kenmare and Bantry Bays. One fish, however, was recaptured in the River Laune.

Fish tagged at the new station opened in 1951 at Streedagh, County Sligo were recaptured along the Irish coast from Keel (at one of our earlier tagging stations) to the River Owenea in County Donegal. No migrations longer than 100 miles were recorded and, in the main, the recaptures were made in rivers within 50 miles of the place of tagging.

As in 1950, in conjunction with the Ministry of Commerce, Belfast, salmon tagging was carried out at a number of places along the coast of Country Antrim. The station at Carnlough used in 1950 was again operated and two new stations at Portbraddan and Portrush were opened. As in the case of the results from Carnlough in 1950, the vast majority of the fish were recaptured along the Irish coasts from the Dundalk river in the east and south to Kilcar on Donegal Bay in the north and west. No long distance migrations to the east coast of Scotland were recorded from the Carnlough Station, although a few recaptures were made on the south-west of Scotland, that is to say, on the coast line of Scotland on the opposite side of the North Channel from Carnlough. Fish tagged at Portbraddan were also recaptured in Scotland. Fish tagged at Portrush were, with one exception, all recaptured in the Rivers Bann and Foyle and their tributaries.

During the year further progress was made on the two schemes of research work which was started in 1950 into stocks of brown trout in Irish lakes. The first scheme related to the removal of coarse fish such as pike, perch, rudd and bream. The second scheme of experimental work called for the addition of nutrients to certain acid lakes in order to ascertain the effects of these on the growth rate of brown trout. It is too early at present to report on these experiments, which are still in progress.

Artificial Propagation of Salmon and Trout.

Operations were again carried out in a large number of centres during the year 1951. Conditions were somewhat more favourable towards the capture of spawning or parent fish in many places and at present it appears that the output of the hatcheries is likely to be somewhat higher than in the previous year. Ova were imported from Great Britain for the fourth year in succession.

Returns of Catches.

Returns of catches were again demanded from every holder on a licence to fish for salmon in 1951 and these returns are now being compiled. The figures for 1950 which are now available indicate that the catch in that year was approximately 970,000 kilograms or a slight fall on that of 1949. In my previous reports I have mentioned that the export figures published monthly by the Department of Industry and Commerce in this country give some idea of the relative abundance of salmon. In 1951 exports amounted to approximately 1,140,000 kilograms compared with 880,000 kilograms in 1950 and 884,000 kilograms in

1949. There is every evidence, therefore, that the catch of fish in 1951 was considerably in excess of that of the previous three years. In the main the increase catch would appear to have been made up of grilse which, however, ran into most rivers 10 days to 14 days later than usual. It is well known that generally speaking the peak in the run of grilse in Ireland is approximately the last week in June in most places but during 1951 the peak was not reached until approximately the 10th July.

Norway

(Leiv Rosseland and Kjell W. Jensen).

In 1951 the research was carried on along the same lines as in previous years but on a somewhat larger scale.

For the tagging of salmon three new stations were established: one near the mouth of the Oselv River near Bergen, one at Bjørøyvær situated in the utmost part of the island belt near Namsos, and one at Hovika not far off the mouth of the Namsen river.

The Sandvika River. In the 1951 season 2324 sea trout and 51 salmon were counted during their upstream migration. This is considerably more than the previous year. The control was, however, started so late that some fish had already passed the site of the trap before the counting commenced. Only 243 sea trout were tagged. These had been stripped at the hatchery and were somewhat warn and fungus-ridden. One may therefore not expect many returns from this tagging. So far 42 have been reported caught (17.3%).

In spite of comparatively high water levels throughout the season, the fish appeared to run, as in previous years, mainly during the floods. Few fish migrated at the peaks of the highest floods, most of them waited till the water level had receded a little.

The spring flood 1951 was unusually large and of long duration, and was followed by heavy rainfloods. Therefore it did not appear possible to control the seaward migration of the smolts. A weir was built as usual, but had to be removed shortly afterwards, and few fish were tagged.

The control of upstream migrants was started in the end of July 1951. Very few fish had entered the river before this time. Only about 10. August were the migrants more numerous, and near the end of the month the upstream migration reached its peak with 336 sea trout and 6 salmon in one day. The migration ceased on 4. November, and by then 3700 sea trout and 131 salmon had passed the fish ladder. 2203 sea trout were females, 1496 were males, and in one fish the sex was not determined. Of the salmon 78 were females and 53 males. As in the previous years most of the fish ascended during the floods.

The Lærdal River. 54 salmon and 46 sea trout, all kelts, were tagged between 27. April and 3. May 1951. At that time the fish were about to leave the river, and no doubt most of the fish reached the sea a few days after they were tagged. Both the salmon and the trout were in unusually good condition as kelts, and were almost entirely free from gill parasites. Two of the salmon were recaptured in bag-nets in the Sognefjord shortly after they were tagged (23. and 28. May 1951).

Out of the 46 sea trout five were recaptured during the summer and one was found dead in the river shortly after it had been tagged.

Altogether 10 salmon have been recaptured out of the 103 kelts tagged in the river in the spring of 1950. Two were caught as kelts shortly after the tagging and eight were recaptured in 1951 thus: 2 on rod and line in the Laerdal river, 4 in the sea in the Sogn and Fjordane fylke, one at Herdla near Bergen and one at Rissa near Trondheim.

Out of the 47 sea trout tagged during spring 1950 in the Laerdal river, 8 were recaptured during the same season and 8 in the 1951 season. Of the latter, 7 were caught in bag-nets and "laksevarp" in the sea, one on rod and line in the Laerdal river. The percentage of recapture was 34. A further seven of these fish were recaptured in the spring of 1951 when fishing for kelts for tagging.

At the new station near the mouth of the **Oselv** river, Os near Bergen, 39 salmon, caught in bag-nets, were tagged. Twenty-two (56.4%) have been recaptured, eight of them in the nets just off the river mouth, some of them a considerable time after they had been tagged. The river was very low throughout the season, and very few fish ascended. Most of them have probably remained in the sea just off the river mouth, waiting for a rise in the river, and thus some have been caught while waiting. The other recaptures have been scattered: one in the Møre and Romsdal fylke, one in the Sogn and Fjordane fylke, one in the Rogaland fylke, one in the Aust-Agder fylke and the remainder in the Hordaland fylke where the tagging station is situated.

At the **Kinn** tagging station, the salmon fishing was exceptionally poor in 1951, and only 43 salmon were tagged. So far 28 recaptures have been reported (65.1%). The recaptures were from the following fylker: 11 in Sogn and Fjordane, 4 in Hordaland, 1 in Rogaland, 8 in Møre and Romsdal and 4 in South Trøndelag. Six of the recaptures (22.2%) were from rivers.

Fishing was also poor at the **Titran** station, and only 67 salmon were tagged. So far 34 (50.7%) have been recaptured. One was caught in Rogaland, one in Hordaland, 3 in Sogn and Fjordane, 9 in Møre and Romsdal, 9 in South Trøndelag, 5 in North Trøndelag, 5 in Nordland and one in the Troms fylke. Thus the migrations from this station were exceptionally long this season. Four of the recaptures (11.7%) were made in rivers.

At the new **Bjørøyvær** bag-net station 106 salmon were tagged. So far 54 recaptures (50.9%) have been reported. In addition one of these fish was recaptured at the Hovika tagging station and released again. 3 recaptures were reported from Møre and Romsdal, 25 from South Trøndelag and 25 from North Trøndelag. For one recapture no locality could be given.

11 recaptures (20.4%) were from rivers. From this station the migrations have been short.

At the new **Hovika** bag-net station off the Namsen river mouth fishing was extremely good, and no less than 424 salmon were tagged. So far 157 recaptures have been reported (37%). Approximately one third of the recaptures are from the Namsen river and tributaries. The recaptures were made in the following fylker: 152 in North Trøndelag, 4 in South Trøndelag, 1 in Rogaland. Most migrations from this station have been short and local only.

The percentage of recaptures from this station is considerably smaller than from the other stations. This probably means that most of the salmon have ascended the river and that the exploitation is low there.

As in 1950, members of the Bergen Angling Club cooperated with us in tagging brown freshwater trout and transferring them to the sea at **Jondal** (Hardanger) and **Os** (south of Bergen). On the 15. June 115 trout were tagged and released. So far 21 recaptures have been reported (18.3%). Out of the 352 freshwater trout tagged and transferred in 1950 in the same localities, only five were recaptured in the 1951 season. Their growth had been very rapid.

In the **Aurland** river five salmon and 32 sea trout were tagged in the fall of 1950. Two of the salmon have been recaptured as kelts, and 10 of the sea trout have been recaptured.

Out of the 36 sea trout tagged in the same river in the fall of 1949, 9 have been recaptured in the 1951 season. Thus the total of recaptures from this experiment has been 16 trout or 44.4%.

The Istra River.

Adult sea trout. In May—June 1951 446 kelts were controlled. More kelts were descending but, as they were difficult to catch for control, the weir was opened on the days 1.—4. July to allow these kelts to leave the river. Of the 446 tagged kelts controlled in spring 1951, 47 (10.5%) were recaught by fishermen during the summer.

Of 158 kelts tagged and released in the spring 1951, 16 (10%) were captured in the sea and in the river Rauma during 1951.

Upstream migration of adults began in 1951 on 25. July. Only 151 adults entered the river. The water level was extraordinarily low during the summer and autumn.

Summary of adult taggings (preliminary):—

Tagged in the spring 1950: 462 descending kelts.	
Of these, were:—	
Caught by fishermen and killed 1950	69
Controlled at the weir, autumn 1950	218
Killed at the weir, autumn 1950	7
Controlled at the weir, spring 1951	51
Killed at the weir, spring 1951	2
Caught by fishermen and killed 1951	21
Controlled at the weir, autumn 1951	12
Tagged as adults during upstream migration in the summer and autumn 1950	563
Of these, were:—	
Controlled at the weir, spring 1951	239
Killed at the weir, spring 1951	5
Caught by fishermen and killed 1951	54
Controlled at the weir, autumn 1951	50
Tagged as descending kelts spring 1951	158
Of these, were:—	
Caught by fishermen and killed 1951	16
Controlled at the weir, autumn 1951	15

Smolts. Descending smolts were not controlled in 1951.

Of 2092 descending sea-trout smolts marked by cutting the adipose fin in the spring 1950, the following numbers have been recaptured at the weir: October 1950, 1 (34 cm.), spring 1951, 10 (26—34 cm.).

Most of the returns from this marking cannot be expected before in 1952—1953.

Scotland

(K. A. Pyefinch).

Though it did not prove possible to start work again on the major scheme of salmon research which was formerly carried out on Forss Water, Caithness, much time was spent during the year in examining the characteristics and assessing the possibilities of other rivers which might be suitable sites for the resuscitation of this project.

Further returns of fish marked as smolts on Forss Water in 1949 and 1950 were recorded in 1951. Twelve further recoveries were recorded of fish marked in 1949, bringing the total recoveries from this marking to 38, or 1.9% of the smolts marked. Recoveries of smolts marked in 1950 have, however, been very disappointing as the proportion so far recovered is well under 1%.

No records of the recapture of any of the salmon kelts tagged on the Dee (Aberdeenshire) during 1950 as clean fish have been obtained but a number of records of the recapture of sea trout, tagged during the same period, have been received. To date, 8 recaptures of tagged sea trout after a period at sea have been recorded; 7 of these were taken on the Dee but the remaining fish was captured at Hirtshals, on the coast of Denmark, thus adding another record to the small list of sea trout which have been known to cross the North Sea.

In collaboration with the Fisheries Department of the Ministry of Agriculture and Fisheries, a programme of sea-trout smolt tagging was carried out on the River Tweed during May. Just over 3500 smolts were tagged and the latest returns indicate that 20 of these have been recaptured. Of these recaptures, 16 have been recorded from the East Anglian coast, 2 from the Tweed and 2 from the Dutch coast.

Salmon were again tagged at sea at the same netting station as was used in 1950, but the 1951 programme, which was largely supplementary to that of the previous year, was shorter than that of 1950. Only

eight visits were paid to the netting station this year, during which 32 salmon and 97 grilse were tagged. Forty-six fish were recaptured in fresh water, a proportionate recovery of about 36%. This proportion is very similar to that recorded last year and, again as in 1950, roughly half the fish recaptured had moved northwards, roughly half had entered the rivers near the tagging site—the Rivers North and South Esk—and a few fish had migrated southwards to enter the Tay and the Tweed. A preliminary report on the results of this experiment has already been submitted to the Salmon and Trout Committee.

The work of the Brown Trout Research Laboratory has been concentrated on two main projects, the continuation of studies on the biology of trout and on detailed surveys of four lochs in central Perthshire in preparation for field fertilization experiments which are planned to begin in 1952.

Records are now available of the rate of development of trout, both under field and laboratory conditions, for three seasons and the results show that development can be retarded at any stage. The factors controlling this retardation have not yet been fully elucidated but it is clear that temperature is important. The observations on the behaviour of newly-hatched trout alevins have been confirmed and have been extended to include salmon alevins and observations on the behaviour of the alevins of the two species after emergence from the gravel of the redd. Some work has also been carried out on the use of perspex boxes, filled with eyed ova, as a means of stocking. The results obtained are promising and a good deal of information has been accumulated on the type of field conditions under which this method of stocking is likely to be successful. In connection with the more general studies of the biology of trout, it should be recorded that it has been possible this year to begin work on the parasites of these fish.

The detailed surveys of the four lochs just mentioned have occupied the attention of most of the staff of the laboratory during the year, since records are being made of their fish populations, their bottom fauna, their plankton and the chemical composition of their waters. The end of 1951 saw the completion of two seasons' work on these lochs, which has provided much information on their characteristics and on the seasonal changes in their populations and chemical constituents.

Other work carried out at Pitlochry has included a preliminary survey of the epiphytes associated with some of the more common water weeds and observations on the importance of Protozoa as constituents of the bottom community. Field and laboratory experiments on the latter topic have shown the rapidity with which the dead bodies of insect larvae and Crustacea can be devoured, especially by ciliates. These observations seem likely to be of considerable importance in understanding the ecology of the bottom community and this work will be continued as opportunities permit.

Sweden

(Jöran Hult).

The Migratory Fish Committee, mentioned in previous reports, has, during 1951, presented a report concerning measures to be taken to obtain cooperation between the hydroelectric power industry and the fishing industry, and to maintain the Swedish salmon stock etc. This work has also been organised and it implies a doubling of the economical resources and the building of a laboratory for salmon research. A hatchery and rearing arrangement for producing smolts will be connected with this laboratory.

The transport of salmon past power-houses in different rivers has been continued and, besides the previously mentioned electrical photocell recorders, arrangements have been made to record ascending salmon in one of the west-coast rivers. As a consequence of the continuous building of new power-houses in the Swedish salmon rivers the problem that we may very soon have to face is not of how to improve the salmon in our rivers but of how to maintain the stock of salmon in the Baltic without natural reproduction in the rivers.

The tagging of salmon has continued as follows:

2-summer-old and older salmon	18,540
2-summer-old and older trout	1,570
young salmon at the coast	94
salmon transported past power-houses	1,255
trout transported past power-houses	57
salmon used for propagation	748
trout used for propagation	533

Many recoveries from previous tagging and marking experiments have been recorded and a report may be presented during 1952.

The kelt-tagging experiments show that kelts from the rivers Umeälven, Ångermanälven and Indalsälven leave the rivers during a very short time at about the change of the month May to June. The migration to the south of the Baltic, where the salmon arrives about October—November the same year, takes place mainly on the Swedish side of the Bothnian Sea. The return to the home river begins in April—May next year and is a fast one. Salmon spawning as grilse seem to return to spawn after only one year, and probably they never go down into the Baltic but remain in the Bothnian Sea the whole summer.

Scales have been collected not only as usual from Baltic salmon but also from salmon of the west coast and some of the west-coast rivers.

Salmon biologists from Denmark, Finland, and Sweden made a trip to northern Sweden and Finland in July to study salmon problems common to Finland and Sweden. There has also been a meeting in Stockholm between salmon biologists from the Scandinavian countries.

SHELLFISH COMMITTEE

1951

By B. Havinga

This administrative report of the Shellfish Committee, the first to appear, shows that in many countries intensive work is being carried out on problems related to the fishing and culture of shellfish. Many of these investigations have been planned with the aim to lend direct assistance to the industry.

For practical purposes the Crustacea and Mollusca are dealt with separately.

The following reports have been received on work carried out in the countries concerned:

CRUSTACEA

Belgium

(E. Leloup).

Biological and Technical Study of the Shrimps (*Crangon vulgaris*). The biological study of the shrimps was continued. Its aim is to ascertain the annual cycle of the stock of shrimps on the Belgian coast.

Experimental and comparative fishing was carried out with nets of different widths of meshes (18—20—22—24—26 mm.).

Treatment of the Material:—

(a) Determination of the quantity of shrimps caught.
(b) Recording of the length distribution of a 1 kg. sample of raw shrimps.
(c) Recording of the number of shrimps with or without eggs.
(d) Determination of the commercial and non-commercial quantities of shrimps caught.
(e) Recording of the length distribution of a 1 kg. sample of commercial shrimps.
(f) Analysis of stomach contents of certain species of fish caught with the shrimp trawl.

Denmark

(J. B. Kirkegaard).

Deep Sea Prawn.

In 1951 only a few hauls with the commercial trawl were carried out in the Skagerak during the investigations in June. As in previous years, two mesh-sizes of the bag (18 mm. and 22 mm. from knot to knot) were used. The following mean sizes (cm.) of the prawns (measured from the eye to the point of the telson) show that the 22 mm. bag gives a catch of prawns bigger than those caught in the 18 mm. bag:— 18 mm. meshes, 7.1; 22 mm. meshes, 7.9.

Norwegian Lobster.

During the fishery with the commercial prawn-trawl in the Skagerak some Norwegian lobsters were caught. The mean length of the males was 14.9 cm. and of the females 11.3 cm.

England

(H. A. Cole).

The collection of material for a study of the distribution, breeding and growth-rate of the **pink shrimp** (*Pandalus montagui*) in the Thames Estuary has been continued throughout the year. Regular monthly trips have been made in commercial boats from Tollesbury and Leigh-on-Sea or in the Ministry's vessels. The hydrological and biological data are now being analysed.

The pink shrimp fishery has been unusually successful this year and catches of 20—40 gallons in $1^1/_2$-hour hauls have been reported. In some catches small shrimps were very prevalent and the destruction of much undersized material continues. On grounds where the pink shrimp fishery failed in the spring and early summer of 1950, the catch this year was up to the normal.

It is considered that water temperature and available food supply may be two of the principal factors governing the migrations of this species, and the investigation of the bottom communities and hydrology of the fishing grounds is, therefore, being extended. Fishing trips from Harwich were commenced in October with the object of locating the grounds on which pink shrimps pass the winter.

The **brown shrimp** (*Crangon vulgaris*) was abundant throughout the year in the Thames Estuary and catches were good, particularly on the Yantlet Flats.

In North Wales a survey was commenced of the distribution of prawns and shrimps of commercial value. Although there is no organized commercial fishery in this area, preliminary catches with trawls and push-nets had shown the presence of concentrations of sufficient density to support a fishery in a few areas.

Promising catches of **true prawns** (*Leander serratus*) have been taken at a few places at the western end of the Menai Straits, but few likely fishing areas for this species have so far been examined.

Catches of bottom animals and samples of bottom deposit have been secured from all grounds, also

hydrological data, and these are being examined with a view to determining the factors governing the distribution of prawns and shrimps.

Finland

(S. Segerstråle).

Some observations have been made on *Leander adspersus* var. *fabricii*, this species, however, is of no commercial value in the Finnish waters.

France

(P. Desbrosses).

L'étude des **crevettes roses** (*Leander* sp.) des côtes de Vendée semble confirmer les conclusions de Forster à Plymouth.

Mensurations de *Crangon vulgaris* pêchés en Charente Maritime.

Netherlands

(B. Havinga).

Statistical investigations on the catch of **shrimps** per unit effort which commenced in 1946 were continued.

Norway

(B. Rasmussen).

In the fall of 1951 an investigation of the **deep sea prawn** population outside the Oslo Fjord was started, in order to find the best protective measures for a specific area. The scope of the work is described in more detail under "Transition Area". A report on this investigation will be published as soon as the material has been worked up.

Some work has also been done on the **crab** (*Cancer pagurus*) by Per Kvavig.

Scotland

(H. J. Thomas).

Gear. Comparative tests have been carried out on fishing efficiencies of various modifications of the Scottish type lobster creel and of various baits. In addition, preliminary experiments have been carried out in Scottish waters to test the relative efficiency of the Scottish type of creel and the Cornish pot. A paper in the press incorporates the results of the former work.

Survey of the Lobster and Crab Fishery. Work has been continued on a detailed survey of the lobster and crab fisheries of Scotland and of their potentialities. Landings have been recorded by creeks for the whole of Scotland and in the case of Berwickshire and Orkney, length analysis of the stock has also been carried out. The statistics of landings during 1951 are of special significance in view of the introduction, on May 1st of that year, of revised regulations raising the minimum length of lobsters from 8″ to 9″ and prohibiting the landing of "berried" and "soft" lobsters. The minimum carapace width of crabs was raised at the same time from $4^1/_4$″ to $4^1/_2$″.

Lobster Tagging. 250 tagged lobsters were released in September 1950, in each of two areas of the Berwickshire coast. In October 1951, 250 local caught lobsters and a similar number of lobsters transported from Orkney were released in the fishing grounds of the extreme south-east of Scotland. Of the 1950 release, 32% of tags were returned from the southern area and 14% in the northerly area. The returns have been used to provide estimates of the population and of mortalities. No obvious migratory tendency has been observed.

Practical Hints for Lobster Fishermen. The pamphlet of this name has been rewritten and a new edition published—H.M.S.O. 1952.

MOLLUSCA

Belgium

(E. Leloup).

Infection of *Mytilus edulis* by *Mytilicola intestinalis* Steuer. Following the decision taken in Paris, in February 1951[1]), by the delegates of different countries during a "*Symposium on Mytilicola intestinalis* Steuer" investigations were made on the mussels living on the Belgian coast during the months of April, July, September and December.

England

(H. A. Cole).

Oyster Research.

Spatfall. Natural spatfall was a complete failure during 1951 on our grounds in the rivers Crouch and Roach, Essex. Subsequent enquiries have confirmed that a similar failure occurred on all beds in Britain. It appears that there was a widespread deficiency of food organisms suitable for the growth and settlement of oyster larvae.

In the rivers Crouch and Roach substantial liberations of larvae occurred during June, July and August, but no growth was observed. Of a total of 15,890 larvae measured only 8 exceeded 0.24 mm. and only 10 were "eyed". The population of 2—10 μ nanoplankton flagellates never rose above 10 per mm^3. during the summer and often fell as low as 2 per mm^3. There was some evidence that breeding oysters severely weakened by low salinity during the preceding winter and spring were producing non-viable larvae.

Settlement of barnacle and *Crepidula* larvae was much below normal and provided confirmatory evidence regarding the unsatisfactory feeding conditions.

Some attention has been paid to the rôle played by plankton predators in the destruction of oyster larvae. A quantitative sampling technique has been

[1]) See under France, pp. 33/34.

developed and hauls were taken at fortnightly intervals during the breeding season. The principal plankton predators appear to be the jelly fish *Aurelia* and the ctenophore *Pleurobrachia*. Maximum number of *Aurelia* taken in a net of 3 feet diameter in 15 minutes was 329. Maximum number of ctenophores taken in the same time was 800. A preliminary investigation of the stomach contents of selected *Aurelia* showed that, at the height of the oyster breeding season, the gastral cavities of an average size specimen contained between 5,000 and 6,000 oyster larvae.

A special quantitative dredge has been constructed for the purpose of estimating the stock of oysters in the rivers Crouch and Roach. This dredge is provided with sledge runners and an adjustable blade and the distance travelled over the bottom is recorded by pedometer. A total of 800 measured hauls has been made over the area of the two rivers, and the information gained is being studied so that the numbers of oysters of each year-class present can be calculated.

The new dredge itself has been the subject of research and a comparative dredging experiment has been conducted using the new dredge, the commercial power dredges and standard hand dredges. On well cultivated oyster layings the new dredge is almost twice as efficient as the power or hand dredges, while on soft limpet infested ground it is three times as efficient as the other two. The advantages and disadvantages of its use and the present design for commercial power dredging are being considered. It is likely to supersede the dredges now in use for reclamation work on derelict grounds.

Elminius.

Experiments on the use of D.D.T. for the control of the alien barnacle *Elminius modestus* Darwin were continued, but the effect of different concentrations of insecticide on oyster settlement was not put to the test because of the absence of spat. The urea formaldehyde resin lacquers exposed last year continued to prevent barnacle settlement after 15 months exposure and more water resistant ones have been tested this year.

Urosalpinx.

The prevalence of the American oyster drill, *Urosalpinx cinerea* Say, on oyster beds in Essex and Kent continues to cause anxiety. A prototype drill dredge has been constructed and gave such promising results that a larger model is being produced. The principle is that as the dredge is towed, shell and other materials roll up and over a mesh through which drills and small shells fall into a fine woven wire container. In this way the ground can be covered quickly without lifting the oysters and culling is reduced. One limitation of the method is that no spawn is collected so that intensive dredging with this type of gear will be carried out to best advantage during the early spring, just prior to spawning. Curved roofing tiles, hitherto used as spat collectors, were this year tried as drill traps on the lower shore. The results are promising.

Crepidula.

The crushing of limpets on board the research vessel was continued as a routine measure throughout the season. The bulk of the crushed material was deposited in the river Roach in the hope of producing some fertilizing effect, but no significant rise in the nanoplankton concentration was observed. The crushed shell serves to harden soft muddy grounds.

Observations have been continued on the rate of repopulation of the grounds in the upper Crouch on which all limpets were killed in the severe winter of 1947. Spatfall this year was very slight. A full report on the biology of *Crepidula* in Essex is being prepared for publication.

Tank Breeding.

The walls of the two large tanks used for breeding at Conway were completely relined with reinforced concrete during the early summer. In consequence it was impossible to begin the breeding experiments until a month after the usual date. Further repairs were put in hand at the end of August, and it was suspected that leaching took place from the new concrete throughout the summer.

Little importance can be attached to the results obtained. A little spat settled late in the season in one tank and 1,000 tiles have been planted in the Menai Straits.

Feeding Experiments.

Attention was concentrated on the possibility of developing a standard method for rearing oyster larvae to settlement in vessels of a manageable size. This is an essential preliminary to a full examination of the food requirements of the larvae. Considerable advances were made in this field. Until this year successful cultures of larvae had not been obtained in volumes of less than 15 litres; in consequence the number of culture vessels that could be maintained was severely restricted. With the modified technique developed this year satisfactory spatfalls were obtained in glass vessels with volumes 120—1,000 ml. It is likely that glass beakers of 1,000 ml. will be adopted as standard in future and it should be possible to provide filtered water, larvae and cultures for batches of up to 40 of this size.

Larvae for this year's experiments were obtained from stock isolated in bowls through which a drip circulation of enriched water was continuously maintained. Fourteen liberations of larvae were used in a total of 71 feeding experiments, using twelve different nanoplankton organisms. In 23 of these experiments the larvae grew to settling size and settlement of spat occurred in eight. The successful food organisms were: *Chromulina pusilla*, *Isochrysis galbana*, Flagellate 7 (Parke), Flagellate 8 (Parke) and

Chlorella atomus. Growth to settling size was also obtained with Flagellate A. 15 (Cole), Flagellate 25 (Parke), *Dicrateria inornata* and *Chlorella stigmata*. No growth was obtained with Chlamydomonad III (Parke), *Synechococcus elongatus*, or Flagellate 22 (Parke).

These experiments have suggested that given culture conditions which do not allow of the accumulation of waste products from the larvae of the food organisms, oyster larvae will grow on a wide variety of food organisms. The growth and settlement on *Chlorella* raises again the question of the ability of the larvae to digest the cell walls of these non-motile green algae.

Shell Disease.

The prevalence of Dutch-type shell disease amongst imported Brittany oysters continues to cause anxiety. The systematic examination of samples of two-year-old native oysters from all the large oyster fisheries shows that the disease is now well-established in Britain. Percentage infection with the disease varied from nil in Falmouth Harbour to 13% in the upper Crouch. Other seriously affected beds are those in the rivers Yealm and Blackwater. According to workers in the Netherlands the disease is most likely to spread in areas which experience a prolonged period of high water temperatures during the summer months. The distribution and relative prevalence of the disease on British beds shows good agreement with this hypothesis.

Fal Oyster Fishery.

By appropriate measures of summer cultivation to increase the area of surface available for spat settlement, combined with pest destruction, the output of the regulated fishery in the river Fal has been raised to three million oysters. This is the highest total of oysters taken from this fishery in one season during the last 25 years.

In co-operation with the Government Chemist a detailed survey was made of the distribution of copper in Falmouth Harbour. Numerous water samples and bottom deposits were analysed. A full picture of the spread of copper-bearing water from Restronguet Creek was obtained. This strongly suggests that the bottom deposit rather than the water may prove to be the principal source of the copper found in oysters. Muds were found to retain considerably more copper than sands, and in general there seems to be a correlation between the copper content of the oysters and the grade of deposit on which they are lying. This subject is being further investigated.

Mytilicola Investigations.

A survey of the distribution of *Mytilicola intestinalis* Steuer in mussels on the west coast of Britain has been completed. *Mytilicola* was found in South Wales, from Barry to Milford Haven inclusive, at Fleetwood and at Barrow-in-Furness. The important commercial beds in North Wales and Morecambe Bay are so far free from parasites, but those in Morecambe Bay are seriously threatened by the infection of mussels at Barrow to the north and Fleetwood to the south.

Conclusive evidence has been obtained regarding the spread of infection in mussels on the undersides of shipping, particularly ex-enemy vessels moved to ship breakers yards after mooring in infected areas and naval vessels laid up and then moved to other areas for refitting.

Experimentation in the laboratory has provided a simple and efficient method by which the infective copepodid stage may be reared from the egg sacs. Experiments are in progress to investigate the physico-chemical factors governing the infection of unparasitized mussels. It is hoped by these means to discover environmental conditions which will prove favourable to the host and yet unsuitable to the spread of the parasite.

Mytilicola has been found in oysters at Penryn, Cornwall, and in the river Blackwater. The low percentage infection suggests that the parasite is unlikely to cause serious trouble in oysters.

France

(P. Desbrosses).

Ostréiculture.

Des destructions considérables d'huîtres (*Gryphaea angulata*) ayant été constatées en 1951 dans le Bassin d'Arcachon, et des Sparidés ayant été incriminés comme auteurs de ces déprédations, des prélèvements et déterminations de contenus stomacaux ont été effectués sur les espèces suivantes: *Chrysophrys aurata* et *Sargus Rondeleti*.

— Les Sargues se nourissent généralement de: Annélides, Crustacés, Echinodermes, Gastéropodes et Lamellibranches (*Cardium*, *Tellina*, *Arca*, *Teredo*, *Mytilus*, *Anomia* sp.). Aucune coquille de *Gryphaea* n'a été observée dans les contenus stomacaux examinés à Arcachon.

— Les Dorades (*Chrysophrys aurata*) avaient dans l'estomac de nombreuses coquilles de Gastéropodes et Lamellibranches (*Mytilus*, *Cardium*, *Tapes* sp.) mais nous n'avons pas trouvé trace de *Gryphaea*.

— De nouveaux collecteurs de naissain d'huîtres ont été expérimentés avec succès par le personnel de l'Office des Pêches depuis la côte de Bretagne jusqu'à Arcachon.

Ces collecteurs en "nids d'abeilles" sont en carton rigide; ils sont chaulés et cimentés avant d'être utilisés.

— Les essais sur l'emploi des engrais en ostréiculture ont été poursuivis à La Tremblade et dans le Bassin d'Arcachon. Les résultats obtenus restent satisfaisants.

Mytiliculture.

Sur l'iniatitive de M. J. le Gall un colloque sur *Mytilicola intestinalis* et la mortalité des moules a eu lieu à l'Office Scientifique et Technique des Pêches

Maritimes à Paris les 8 et 9 Février 1951. Les communications de ce colloque sont parues dans la *Revue des Travaux* de l'Office Scientifique et Technique des Pêches Maritimes, T. XVII, Fasc. 2.

Le stock de moules sur les bancs naturels des côtes du Boulonnais est en voie de diminution depuis plusieurs années. Un rapport sur la question sera présenté prochainement.

Autres Lamellibranches.

Des dragages de coquilles St. Jacques (*Pecten maximus*) et de vanneaux (*Chlamys opercularis*) ont eu lieu en rade de Brest en Janvier, Juin, Août, Septembre 1951. Des mensurations très nombreuses ont complété celles des années précédentes dans le même secteur. M. LE GALL conclut à une population de coquilles St. Jacques autochtone, évaluée à plus de 40 millions d'individus, dont le stock restera en équilibre à la condition que la pêche, actuellement règlementée, ne soit pas intensifiée.

— Le pétoncle (*Chlamys varia* L.) a été étudié au laboratoire de La Rochelle (mensurations de 14,000 coquilles et marquages à l'aide d'une fraiseuse électrique perforant les 2 oreillettes du même côté de la coquille).

— La coque de la Baie de Somme (*Cardium edule*) a fait l'objet d'un travail qui paraîtra dans la *Revue des Travaux* de l'Office des Pêches.

Netherlands

(P. KORRINGA).

Oysters.

Spatfall predictions based on plankton observations have been carried out throughout the summer season. In measuring the intensity of setting, special attention has been paid to the influence of the angle at which the experimental collectors are held in the containers, and to the factors involved in this phenomenon.

Efforts have been made to develop new types of commercial collectors and to avoid a too heavy setting of the newly arrived barnacle *Elminius modestus* on the collectors of the oystermen.

Dr. J. G. MACKIN of the Texas A & M Research Foundation, kindly examined oysters collected during a mortality in some holding basins and on some oyster plots in the early spring of 1951, and found that the Protozoan parasite *Hexamita* abounded in the diseased and dying oysters.

Due to the unstable weather in the summer of the year 1951, periods of high water temperature appeared to be of too short a duration to permit an outbreak of shell disease.

Mussels.

Much time has been devoted to studying the mussel parasite *Mytilicola intestinalis*.

The Dutch Waddensea west of the Isle of Rottum was still completely free from *Mytilicola* in the year 1951. The transition area, situated between the isles of Borkum (Germany) and Rottum, has been kept under frequent control.

In the Zealand waters the 1950 catastrophe did not repeat itself in the year 1951. Contrary to the events in 1950, *Mytilicola* did not reproduce itself appreciably before the large-scale dying off of the hibernated parasites started in the month of May. Hence there was a tremendous reduction in the number of *Mytilicola* in the Zealand waters. Noteworthy is that this reduction was accompanied by a rapid amelioration in growth and fattening of the mussels which were now only lightly infected or even completely free of parasites. Later in the year 1951 *Mytilicola* appeared to gain ground locally (Zandkreek, Geul, O.S.O.D.) which resulted there in poor growth, lack of fattening, loss of byssus-attachment, and mortality.

The influence of the number of *Mytilicola* on the dry weight of mussels has been studied in detail.

Efforts to free mussels from their parasites by chemical methods have not yet met with success.

Scotland

(H. J. THOMAS).

Mussels.

Although abundant around the coast mussels are not harvested for human consumption. The small fishery exists almost exclusively for the production of bait. The occurrence of *Mytilicola intestinalis* is, however, of international significance and has therefore been investigated. Samples have been examined from stations at 18 positions around the Scottish coast. The parasite appears to be restricted to Gareloch in the Firth of Clyde and to the northern shore of the Firth of Forth.

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Korringa, P.: "De aanval van de parasiet *Mytilicola intestinalis* op de Zeeuwse mosselcultuur." Visserij-Nieuws, **3** (7), suppl., 7 pp., 1950.
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HYDROGRAPHICAL COMMITTEE

1951

By H. U. Sverdrup

Belgium

(E. Leloup).

1. Aboard the Lightship "West-Hinder":—
   a) daily a water sample (temperature, salinity, alkalinity).
   The results are communicated regularly to Lt.-Cdr. J. R. Lumby, Fisheries Laboratory, Lowestoft and to Mr. Jens Smed, Hydrographer, Copenhagen.
   b) weekly a water sample of 1 litre (for complete chemical analysis).
   c) as the "Carruthers Vertical Log Current Meter" was not installed aboard the lightvessel, no continuous current observations were carried out during 1951.
2. Aboard the Fishery Protection Vessel "Luitenant Victor Billet":—
   a) Stations B 13, 14, 15 and 16 of the line Gravelines-Deal and Station B 22 off the Belgian coast:
   once a month (from July till October) a water sample at the surface, at the bottom as well as at 20 and 40 m. according to the depths (temperature, salinity, alkalinity);
   once a month (from July till October) a water sample at 20 m. for complete chemical analysis.
   b) Full-Herring Fishery. During the inspection cruises of August and September, water samples have been taken on the herring grounds of the northern and central areas of the North Sea, i. e., on the Fladen Ground, Gut, and Dogger Bank.
3. Aboard the Fishery Research Vessel "Hinders":—
   a) once a week, a water sample on the same spot (51°13'40" N., 2°52'40" E.) off the Belgian coast.
   b) Spent-Herring Fishery. Water samples were collected on the spent-herring grounds (mainly off Dunkirk) during the months of February and December whilst the herring tagging experiments were in progress.

Denmark

(Helge Thomsen).

Cruises. In connexion with biological work observations of temperature and salinity and partly of phosphate were made from the "Dana" in the North Sea during the last half of May. Sections R and S were worked. In June observations were made in the waters round the Faroes, comprising a section eastwards along Lat. 62° N. to Long. 21° W., and the Faroe-Shetland section. In November—December observations were carried out in the Norwegian Sea, and the Faroe-Shetland section was repeated.

From the "Biologen" observations of temperature and salinity were made in the Transition Area in

February—April and October. In the Baltic near Bornholm observations of temperature, salinity and oxygen content were carried out in August.

Observations in Greenland coastal waters were carried out by M/C "Adolf Jensen".

Observations from Liners. Surface samples were collected from liners on the routes Lindesnes—Greenland, Lindesnes—Iceland, and Esbjerg—Grimsby/London.

Observations from Lightships and coastal stations. Regular hydrographic observations have been made by the Danish Meteorological Institute as follows:—

1. daily observations of temperature and salinity from 12 lightships and 17 coastal stations,
2. 4-hourly estimations of the surface current from 12 lightships,
3. observations approximately twice per month of temperature, salinity and oxygen content in the Bornholm Deep off Christiansø.

England

(J. R. Lumby).

Fisheries Laboratory, Lowestoft.

1. **Research Ships.** North Sea. From January to April salinity and temperature observations were made in the Southern Bight, in connexion with plaice-egg surveys. In the first half of June, an investigation was made of the effect of tidal streams on the distribution of salinity in the Southern Bight, as part of a study of water movements. In the second half of the month, temperature observations were made off the north-east coast, to study the thermocline in relation to plankton. Similar observations were made in September, in the general locality of the Dogger Bank. In December, salinity and temperature observations were made in Dover Straits region, in connexion with herring investigations.

   Barents Sea. The hydrographic section running westward from Bear Island was worked in February, March, May, June, September, and December. The Norway—Bear Island section was run in February only. Temperature observations were made throughout the year in the Bear Island—Spitsbergen—Hope Island region, in connexion with studies of the effect of temperature on the distribution of fish.
2. **Commercial Vessels, Lightships, and Ocean Weather Ships.** Routine observations of surface salinity and temperature were continued as before. The British and Netherlands Ocean Weather Ships continued the collection of surface salinity and temperature observations at Stations "I" and "J", and on passage to and from stations.

   In accordance with the resolution of the Council a series of 3 charts, covering the region surrounding the British Isles, and showing surface salinity, surface temperature, and wind and current, has been published for each month from June 1950. The charts for October 1950 onwards have been distributed three to four months after the month to which they refer. The data used for the charts, in addition to our own, have been kindly supplied by other British and foreign institutions making observations in the region.

Marine Biological Association, Plymouth.

Cruises to International Hydrographic Station E_1, 50°02′ N., 4°22′ W., have been made monthly during the year, and observations made on temperature, salinity, inorganic phosphate, total phosphorus, and silicate. There has been no marked change in the water since the previous year.

Department of Oceanography, Liverpool University.

Surface temperatures and salinities were observed three times per week at each of nine stations in the Irish Sea. The salinities were determined by a potentiometric method (described in a forthcoming number of the *Journal du Conseil*).

During five weeks of the summer, continuous and simultaneous records of the pressure on the sea-bottom at two stations in Red Wharf Bay, and of the tidal currents at these stations, were taken. From these records, a number of determinations of the force of friction between the tidal current and the sea-bottom and between two layers of water at a number of depths have been made.

A photo-electric spectrophotometer was used for the determination of trace elements in sea water.

Hydrographic Department, Admiralty.

The continuous current-measuring programme earlier reported upon has been continued aboard the lightships "Varne", "Smith's Knoll", and "Dowsing", and, with German co-operation, has been in train since May 1951 from the lightship "S. 2". Preparations have been made for the extension of the work to the lightships "Royal Sovereign", "St. Govans", "Skulmartin", and "North Carr".

The Wind Service has been maintained. An atlas has been prepared, and will shortly be issued, by the German Hydrographic Institute, in which, additional to the basic tables, there will appear a charted wind-frequency analysis for averaged calendar months, worked up in this Department.

National Institute of Oceanography.

Wawes and Swell. An account of recent progress is being prepared for publication; there are still no final answers to the basic problems but evidence is available in support of a number of generalizations which allow better wave and swell predictions.

Energy Exchange between Atmosphere and Ocean. The ships' observations collected by the Marine Division of the Meteorological Office are being used to compute the energy balance for the Southern Ocean, and the South Atlantic, Indian and South Pacific

Oceans. The drag of the wind over a water surface has been measured in a reservoir, near the Scilly Isles.

Photo-electric Correlation Meter. A machine has been made for measuring auto-correlations, and cross-correlations between records with varying time lags. Experiments are being made to see whether useful information can be obtained about the transport of water in a current by correlating long series of sea or air temperatures taken at successive points along the path of a current.

Finland

(G. Granqvist).

Regular hydrographic recordings as follows:—

at 19 fixed stations: temperature and salinity in deep water,

at 7 lightships: temperature, salinity and current in deep water, wind,

at 1 liner on the route Helsingfors—Copenhagen (or Antwerp): surface temperature and salinity.

Regular ice observations have been made at about 70 regularly working ice stations, 5 ice breakers, and the Finnish winter liners.

France

(L. Faure).

Le navire océanographique "Président Théodore Tissier" a travaillé du 19 Janvier au 21 Septembre en Manche et en Atlantique dans les régions de Madère, des Antilles, de Terre-Neuve, des Açores et le long de la côte française.

Au cours de sa campagne les observations hydrologiques habituelles ont été faites: prises de températures et prélèvements d'eau, au total 1800 échantillons d'eau ont été récoltés au cours de 857 stations.

La frégate "Aventure" de la Marine Nationale a travaillé du 13 Avril à la fin de Juin 1951 sur le Grand Banc de Terre-Neuve; en Août sur les fonds de pêche de la côte ouest du Groënland, effectuant 85 stations hydrologiques et recueillant 595 échantillons d'eau.

L'aviso "Ailette" de la Marine Nationale a effectué des prises d'eau et de températures en surface dans différentes régions: au mois de Mai sur le banc d'Utsire, au mois de Juin de l'Ile aux Ours au Cap Nord et au mois d'Octobre dans le sud de la Mer du Nord: du Skagerak au sud-ouest du Dogger Bank.

Les frégates météorologiques "Le Brix" et "Mermoz" ont continué les observations hydrologiques habituelles au point K (45° L. N. et 16° W. Gr.) et sur les routes d'aller et retour.

Les sections hydrologiques en Manche ont été poursuivies en collaboration avec les services du Ministère de l'Agriculture et des Pêcheries de Grande-Bretagne.

Des stations fixes mensuelles de Février à Décembre 1951 ont été faites dans la région des Iles de Ré et d'Oléron par le laboratoire de La Rochelle (250 mesures de températures et de salinités).

Holland

(P. Groen).

Koninklijk Nederlands Meteorologisch Instituut, De Bilt.

1. Surface temperature measurements and collection of water samples once a week from liners on the routes Hoek van Holland—London and until 1. August IJmuiden—(Texel—)Hull.
2. Three-hourly surface temperature measurements from the light vessels "Goeree", "Texel", and "Terschellingerbank".
3. Hydrographic observations in the southern North Sea.
4. Surface temperature and salinity measurements from the Netherlands weather ships on their routes to and from weather stations K, J, and (from July) A.

Rijksinstituut voor Visserijonderzoek, Amsterdam.

1. Salinity measurements from the lightships "Goree" (once a day), "Texel" (3 times a day) and "Terschellingerbank" (3 times a day).
2. Hydrographic investigations on fishery research cruises in the southern North Sea.

Rijkswaterstaat, Studiedienst Directie Benedenrivieren, Den Haag.

Continuous measurements of currents and suspended material from the lightships "Goeree", "Texel" and "Terschellingerbank".

Zoölogisch Station, Den Helder.

Hydrographic investigations in the Wadden Sea area.

Iceland

(U. Stefánsson).

Cruises. In 1951 a cruise was made off the south coast of Iceland from 4. April to 2. May. From 22. June to 9. July extensive investigations were made off the west and the north-west coast. At the same time observations were made from another vessel off the north-east coast of Iceland and between Iceland and Jan Mayen. The usual sections off the north coast were worked during the latter half of July and these were repeated in August. On this last cruise observations were also made in the area between Scoresby Sound and Jan Mayen and a section was run from Jan Mayen to NE. Iceland. During all of these cruises observations were made of temperature and salinity.

Measurements of the sea-surface temperatures were continued by means of thermographs installed in three ships, one running from Reykjavík to New York and two coastal liners.

Ireland

(A. E. J. Went).

No hydrographic work was done at sea during 1951.

Norway

(J. Eggvin).

Directorate of Fisheries. Institute of Marine Research.

1. Cruises.

During 1951 16 cruises were undertaken by "G. O. Sars", "Johan Hjort", "Krill" and 6 chartered vessels. Hydrographic investigations were carried out each month of the year.

The fields of operation were the Norwegian coastal water, the Norwegian Sea, the Barents Sea, the Davis Strait and the Skagerak.

9180 observations of temperature and 8583 of salinity were taken at 1086 hydrographic stations. In addition 3800 analyses of oxygen content and phosphate were made.

Current measurements from anchored ships were carried out in the Vestfjord, the Balsfjord, and the Malangsgrunn in northern Norway.

2. Fixed Oceanographic Stations.

Routine observations of salinity and temperature from surface to bottom were continued during the year at the oceanographic stations Lista, Utsira I and II, Sognesjöen, Lusterfjorden, Ona, Eggum, and Skrova.

3. Sea-Surface Thermograph Service.

Thermograph records were obtained from 8 liners running the following routes from Bergen: (a) to Newcastle, (b) to Antwerp, (c) to New York, (d) to Kirkenes (East Finmark), (e) to Oslo.

Salinity samples were collected at fixed positions on these routes. Thermograph records were also obtained from a collier running between Advent Bay, Svalbard, Lat. N. 78°15′, Long. E. 16°04′ and different ports in Norway during the summer and from a liner running between Southampton and the Canary Islands during the winter.

The sea surface thermograph records on board the weather ships "Polarfront I" and "Polarfront II" at station M (L. N. 66°, L. E. 2°) and between this station and Bergen have been continued. At fixed positions between station M and Bergen surface samples have been taken.

The Geophysical Institute of the University of Bergen.

The M/S "Armauer Hansen" carried out regular investigations along the Sognefjord section (from Bergen about 280 naut. miles towards the north-west) in May, July, and August, and in the fjords of western Norway in February, April, June, August, October, and December.

In co-operation with the Geological Department of the University of Bergen detailed bottom soundings were carried out on the Continental Shelf off Møre in June.

The regular investigations at weather ship station M were continued. These investigations include 6 stations per week, of which one station to about 2500 m. depth.

Flødevigen Sea-Fish Hatchery, Arendal.

Hydrographical investigations were carried out in the fjords of southern Norway and in the Skagerak by help of the new research ship "G. M. Dannevig".

2791 observations of temperature and 2749 of salinity were taken at 443 stations. In addition 1440 analyses of oxygen content were made.

Portugal

(A. M. Ramalho).

No hydrographic work was carried out at sea during 1951.

Scotland

(J. B. Tait).

The regions covered by Scottish hydrographic operations in 1951 were generally as in 1950, with some re-orientation of effort to embrace more intensive investigation of localised areas in connection with biological problems, and a special survey in the month of June of the waters west of the British Isles to longitude 17° W., from Faroe Bank in the north to the region south-west of Ireland in the south. The range and incidence during the year of the several research cruises are cited in the report of the North Sea Sub-Committee.

A total of over 1700 hydrographic stations were occupied, entailing the collection of over 10,500 combined temperature-salinity observations, 2200 oxygen determinations, a similar number of free phosphate determinations, while from selected positions and depths some 240 total phosphate and 370 pH determinations were made. Surface drift-bottles in groups of five were liberated from 330 positions and, in addition, 1100 drifters were similarly set out by the weather ships *en route* to and at weather stations I and J.

A preliminary report on the results of these drift-bottle liberations and of the main hydrographic features of the northern North Sea and the Faroe-Shetland Channel regions will appear in the 1951 volume of *Annales Biologiques*.

Spain

Instituto Hidrografico de la Marina, Seccion Hidrografica (F. Balén).

The following tidal observations were carried out:—

1. North-west coast of Spain, near El Ferrol del Caudillo. During one month uninterrupted observations for obtaining harmonic constants.
2. South coast of Spain, near Cadiz. Observations for reduction of soundings and for obtaining non-harmonic constants. (Vessel: "Juan de la Cosa").
3. North coast of Morocco, between river Kert and Ras Afrau. Observations for reduction of soundings. (Vessel: "Tofiño").

4. West coast of Africa, near Cape Bojador. Observations for reduction of soundings. (Vessel: "Tofiño").
5. West coast of Africa, near the Rio de Oro peninsula. Observations for reduction of soundings and for obtaining non-harmonic constants. (Vessel: "Malaspina").
6. Canary Islands, near Mogán (Gran Canaria). Observations for reduction of soundings. (Vessel: "Malaspina").

Instituto Español de Oceanógrafía
(R. García-Rodríguez).

Oceanographical cruises by "Xauen" in the Alboran Sea and the Mediterranean waters of Spanish Morocco (January and June) and northwest of the Peninsula and in the Cantabrian Sea (July—August).

Weekly determinations of physical and chemical factors at a number of coastal stations (San Sebastián, Santander, Vigo, Málaga, Barcelona, and Palma de Mallorca).

Tidal observations by mareographs at a number of stations (Pasajes, Santander, Gijón, Coruña, Vigo, Cádiz, Tarifa, Algeciras, Málaga, Ceuta, Las Palmas (Gran Canaria), Santa Cruz de las Palmas, and Arrecife).

Sweden
(N. Jerlov).

The two permanent sections P and M were covered in all months except June.

Regular observations of temperature, salinity, and currents were carried out at Bornö Station and at 10 Swedish lightships.

The hydrographical investigations of the fjords of the Swedish west coast were made every second month with a special view to study water properties close to the bottom, in particular the oxygen content.

During a cruise in the Baltic in July the chief interest was focussed on the hydrographical conditions in the deep basins.

The optical measurements of suspended particles in the sea have revealed that the particle distribution affords a useful indication of the water movements. Therefore, the particle content was often determined in the routine work.

Transparency measurements were carried out in coastal as well as in off-shore waters with the primary intention of studying the role of the water transparency as an identifying property for a water mass.

PLANKTON COMMITTEE

1951

By Trygve Braarud

Belgium
(E. Leloup).

Plankton samples were taken weekly aboard the West Hinder lightvessel; a phytoplankton sample was taken at the surface by filtering 100 litres of water through silk No. 25 and a zooplankton sample was taken vertically, from the bottom to the surface, filtering through net silk No. 3.

Once a month from July till October a plankton sample was taken aboard the fishery protection vessel "Luitenant Victor Billet" at stations B13, 14, 15 and 16 of the Gravelines—Deal line and at station B22 off the Belgian coast; these were for zooplankton and were taken vertically, from bottom to surface, using net silk No. 3.

Denmark
(Jul. Grøntved).

1) Investigations of the food of the herring in the waters round Bornholm, which have been carried out through several years, were continued.

2) In 1950 an investigation was started into the occurrence and distribution of the planktonic animals in the waters round the Faroes; this work was continued on the basis of material collected on the "Dana" cruises in 1947, 1948, 1950 and 1951. These plankton investigations are connected with investigations of the food of herring in north Atlantic waters.

3) The working up of the phytoplankton material collected in the North Sea in May 1947 and 1948 as a part of the international survey was finished (see the Norwegian report).

4) During the two "Dana" cruises of this year in Faroe waters a number of phytoplankton samples were collected; the microscopical examination of this material was commenced.

5) Phytoplankton was sampled in Præstø Fjord and here certain alterations were recorded in the composition of the plankton population as compared with previous years; probably the cause was the increasing degree of contamination of the water.

6) Working up of phytoplankton material collected on the "Dana" cruise to Greenland waters in 1950 was started.

Publications.

GRØNTVED, JUL.: Phytoplankton studies. 2. A new biological type within the Genus *Chaetoceros*, *Chaetoceros sessilis* sp. nov. Kgl. Danske Vid. Selsk. Biol. Medd., **18**, 17.

— *Trichophrya Danae* sp. nov., a suctorial Protozoan from Greenland Waters. Medd. om Grønland, **142**, 8.

HANSEN, K. VAGN: "On the diurnal migration of zooplankton in relation to the discontinuity layer." Journ. du Cons. **17**, 3.

STEEMANN NIELSEN, E.: "The marine vegetation of the Isefjord. A study of ecology and production." Medd. Komm. Danmarks Fisk.- og Havunders., Ser. Plankton, **5**, 4.

England.

Lowestoft (R. S. WIMPENNY).

Collections made by English research ships in the North Sea and the Barents Sea revealed that in both areas the standing crop of plankton as found by the Hensen net was a poor one, and that the fat content was also low.

Six cruises were made between February and October on each of which two lines of Hensen net stations were worked 75 miles west and 65 miles south-southeast of Bear Island. In addition to the generally poorer catches there was a notable absence of the large numbers of *Calanus finmarchicus* found between May and July in 1949 and 1950 in the West Spitzbergen Current. Conditions on the southern line in June resembled those found in July 1950, when there were large numbers of euphausid larvae.

In May and June numerous stramin and mosquito net hauls were made between Bear Island, Hope Island and the Central Bank in connection with the survey of capelin concentrations. These revealed *Thysanoessa inermis*, *Sagitta arctica* and larvae of *Pandalus borealis* as the most important species over the deep water between the banks. Over the banks west of Bear Island in June a series of stramin net hauls showed *Limacina helicina* to be present but less frequent than in 1950. *Themisto libellula* and *Limacina helicina* dominated the catches of this net in the Spitzbergen area in September and October.

Phytoplankton samples continue to have been taken from the Ocean Weather Ships at stations "Item" and "Jig" in the Atlantic. Large numbers of salps and doliolids at station "Jig" in late May and early June was an outstanding feature of these observations.

North Sea plankton collections, mainly with Hensen egg or larva nets, were made in the Southern Bight during the plaice spawning season, in May in connection with plaice trawl hauls made in statistical squares G5, 7 and 8, and over the East Anglian Herring grounds. The usual Flamborough Line stations were also carried out in May, June, July and September as well as a cruise regularly made off the NE. coast in June for the purpose of relating the fat content of the plankton to the subsequent condition of the herring. The investigations over the East Anglian herring ground revealed a very heavy crop of the diatom *Rhizosolenia styliformis* to the north of the fishery in the early part of the season.

The uptake of phosphorus at different temperatures has been the subject of continued experiments using cultures of diatoms of different sizes, and similar work has been concluded for the μ flagellate *Isochrysis*. It has also been shown that *Biddulphia sinensis* needs an optimum quantity of "Erdschreiber" when grown in culture and that *Nitzschia closterium* will not grow when a light intensity of fairly low value is run for 12 hours a day.

Plymouth (F. S. RUSSELL).

Dr. H. W. HARVEY and Dr. C. P. SPENCER have been investigating the growth of the diatom *Nitzschia closterium* and its uptake of nitrogen compounds. It appears possible that the nitrite stage in the reduction of nitrate to ammonia is by-passed when the plant is in darkness. The synthesis of chlorophyll *a* and other pigments ceases in *Nitzschia* when no more nitrogen is available in the medium, but the cell continues to divide. These experiments are being made with cultures rendered bacteriostatic by the use of antibiotics.

Dr. MARY PARKE and Miss D. BALLANTINE have continued studies of planktonic unicellular plants, especially flagellates, of which species-pure cultures of over 100 different kinds are now being kept.

Mr. F. S. RUSSELL has shown that the prevalent form of the copepod *Calanus* off Plymouth is *helgolandicus*.

Regular weekly collections with the 2-metre ring-trawl have been continued by Mr. P. G. CORBIN and there appear to be no marked changes from those prevailing in recent years.

Port Erin (J. S. COLMAN).

The study of the distribution of plankton in the Irish Sea in relation to hydrographic factors, begun in 1949, was continued. The initial stage of this survey has been completed and a report is in the press. The Hardy plankton indicator was again the main apparatus used, in order to cover as wide an area as possible, and virtually the whole Irish Sea was sampled in two cruises in May and October. From a study of indicator species, four main components of the water in the Irish Sea can be deduced with some certainty: 1) a body of water originating in the south and moving between Wales and the Isle of Man; 2) English coastal water; 3) mixed water round the Isle of Man, and 4) a body of water originating somewhere to the north of Ireland, reaching the Irish Sea through the North Channel and proceeding down the east coast of Ireland. This movement, as deduced from the distribution of plankton, is more important than previous (but limited) hydrographic evidence would have suggested; a detailed plankton and hydrographic survey of the North Channel is required.

Plankton samples were also taken round the south of the Isle of Man in July, as part of an attempt to elucidate the abnormal distribution of herring at that time. The above work was conducted by Dr. Williamson.

Mr. Bowers has continued his tow-net survey of the distribution and movements of the larval and post-larval herrings, after they leave the now-established spawning grounds off Douglas in the autumn. A report on this work is in the press. It is now clear that the larvae are influenced by the first of Williamson's watermasses (see above), and that they tend to accumulate in the shallow bays of the English and Scottish coasts. Here they grow up for a year or two, before appearing in the commercial catches off the Isle of Man for the first time as 2-ring fish.

France

(J. Fleury).

Office des Pêches, Paris.

Le service Plancton de l'Office des Pêches de Paris poursuit les triages et le classement du phytoplancton et du zooplancton provenant des pêches faites:

— au cours des croisières du "Président Théodore Tissier", de la frégate "Aventure", de l'aviso "Ailette";

— à bord des frégates météorologiques françaises stationnées au point K;

— par les laboratoires ostréicoles de l'Office des Pêches.

Les listes d'examens établis permettront l'étude des variations saisonnières du plancton des côtes françaises de l'Atlantique et de la Manche, particulièrement celle des copépodes et des chaetognathes de la Manche.

Les espèces rencontrées sont déjà mentionnées dans des travaux antérieurs (voir *Annales Biologiques*, 1949).

Des expériences faites au laboratoire ont permis d'apporter des conclusions sur le comportement aux diverses températures et salinités de l'eau de mer du copépode parasite *Mytilicola intestinalis* Steuer. Elles témoignent de la longévité et de la résistance du parasite.

Etude et schémas de larves de Lamellibranches.

Laboratoire Arago. Des pêches régulières de plancton ont été organisées à des stations établies à des distances inégales de la côte. Elles sont effectuées à différentes profondeurs, de jour et de nuit. L'étude qualitative et quantitative des échantillons renseigne sur les migrations saisonnières.

Laboratoire d'Endoume. Les recherches sur le plancton du golfe de Marseille qui se sont poursuivies toute l'année ont permis de reconnaître une influence des diverses houles soulevées par les vents sur l'abondance des éléments holoplanctoniques et méroplanctoniques ainsi que des variations saisonnières.

Les travaux de bactériologie entrepris en liaison avec le laboratoire de Banyuls ont établi l'importance des aliments bactériens pour certains animaux du plancton, notamment pour les Copépodes.

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Fauvel: Annélides polychètes du Golfe de Tadjoura recueillies par M. J. L. Dantan en 1934, au cours de pêches nocturnes à la lumière.? 2ème série, Tome XXIII, Octobre 1951.

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— Sur la *Clionina longicaudata* (Souleyet) mollusque gymnosome. Bull. Soc. Zool., Mai 1951.

Hovasse, R.: Contribution à l'étude de la Cnidogénèse chez les Péridiniens. Arch. Zool. Exper. Gén., 87, 6, 299—334, 1951.

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— Notes sur les Trachyméduses *Persa incolorata* Mac Crady et signification de la *Quadralaria pyramidalis* R. et M. L. Weill. Arch. Zool. Expér. Gén. 1951. 88. Not. et Rev., No. 1, pp. 20 et 23.

— Notes sur les Hydroméduses méditerranéens de la famille des Oliudiadidoe. Arch. Zool. Exper. Gén., 88. Not. et Rev., No. 1, pp. 32 et 41.

Algérie

(F. Bernard).

Comme suite aux recherches des années précédentes, plusieurs navires ont contribué aux prises d'eaux et de plancton en différents points des côtes d'Algérie, surtout au large d'Alger et de Ténès. A titre de comparaison, des échantillons furent récoltés aussi dans les parages des Baléares, de Toulon, de l'île d'Elbe et de Naples.

1°. Le problème du courant atlantique et de son influence sur les organismes a été abordé (F. Bernard). Profond de 50 à 200 mètres, large de 6 à 60 km., ce courant est plus riche en sels nutritifs et en plancton que les eaux purement méditerranéennes voisines.

2°. Par rapport à la Méditerranée classique, le phytoplancton offre une distribution verticale singulière au point de vue quantitatif. Son maximum d'abondance est noté, d'abord entre 30 et 70 mètres, ensuite entre 400 et 800 mètres. Cette fertilité profonde (jusqu'à 1 million de flagellés calcaires par litre) explique la richesse du zooplancton aux mêmes niveaux. Le peuplement de détail en Coccolithophorides et la structure de ces Protistes sont étudiés dans le mémoire de Mme J. Lecal-Schlauder.

3°. Le Dr. Dieuzeide a résumé les résultats de la croisière du "Président Théodore Tissier", en ce qui concerne le zooplancton, les larves de thon rouge et d'anchois à l'est de l'Algérie.

4°. Des recherches sur les facteurs climatiques de variation du zooplancton sont en cours à Alger, grâce à plusieurs prises au filet fermant chaque semaine.

8 chercheurs contribuent à la détermination des groupes suivants: Radiolaires, Siphonophores, Chétognathes, Cladocères, Copépodes, Tuniciers, larves de poissons. Les premiers résultats seront publiés en 1952.

5°. Divers parasites d'intérêt pratique sont décrits. Le Professeur M. Rose et Mlle Hamon travaillent sur le cycle des Lernaeidae. Le Professeur A. Hollande a découvert un nouveau Péridinien, commun à Alger ou il peut détruire plus de 30 % des œufs de *Sardina* et *Sardinella*.

Publications.

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Dieuzeide, R.: Campagne du "Président Théodore Tissier" en Méditerranée. Bull. Stat. d'Aquicult. et de Pêche de Castiglione. N.S., No. 3, pp. 85—133, 1952.

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Tunisie

(H. Heldt).

L'examen des échantillons de plancton recueillis dans les eaux tunisiennes par les bâtiments de la Marine et les chalutiers d'État s'est poursuivi à la Station Océanographique de Salammbô, ainsi que l'étude du plancton de la croisière du "Président Théodore Tissier". Des formes rares ou nouvelles pour la Méditerranée ont été trouvées.

Holland.

No report received.

Iceland.

No report received.

Ireland

(A. E. J. Went).

No plankton work has been done during 1951.

Norway.

Fisheries Directorate, Bergen (Kr. Fr. Wiborg).

As in previous years collection of fish eggs and larvae with the Clarke-Bumpus plankton sampler was undertaken during April and May in the coastal and bank waters of northern Norway. Cod larvae were more numerous in May 1951 than in May 1950. During the last half of May larvae of capelin were very numerous and occurred further south than recorded in previous years. Large numbers were taken as far south as in the Andfjord, and some specimens even occurred in the outer part of the Vestfjord. This occurrence may be due to the lower temperature which had induced the spawning shoals of capelin to move further south. At Eggum, on the outer side of the Lofoten islands, the temperature in the upper 50 metres during March and April 1950 varied between 4.5 and 5.5° C, while at the same time in 1951 the temperature was about 1° C. lower.

A report on the occurrence of fish eggs and larvae in the mentioned areas during 1950 and 1951 has been published in 1952.

Plankton sampling was also continued at 4 permanent stations along the coast of Norway, at Sognesjöen and Ona on the west coast of Norway, and at Skrova and Eggum in the Lofoten area. The samples are taken in vertical hauls from bottom to surface and from 50 metres to surface with the Nansen net 8/72.

The material has been worked up in detail for the years 1949 and 1950, and volume measurements by the displacement method have been made for all years, including 1951. A large number of *Salpa fusiformis* was taken in September and October at the Sognesjöen and Ona stations, indicating a strong influx of the North Atlantic current.

In some fjords south of Bergen, the sampling of zooplankton was continued during the period February—September in cooperation with the investigations of herring and sprat. Vertical hauls were made with the Nansen net from varying depths to the surface. The material from 1951 was worked up by volume and a report is in preparation (Kåre Gundersen).

Zooplankton was also sampled in vertical hauls with the Nansen net and in horizontal hauls with the 1 m. egg-net during the cruises of M/S "G. O. Sars" in traverse sections of the coastal banks of Norway from Helgeland to North Cape in April and May, and during cruises to the Barents Sea and Bear Island in the same period. Part of the material has been worked up and included in the report on the fish eggs and larvae from the Lofoten area.

Plankton was also collected on the different cruises of the "G. O. Sars" in the Norwegian Sea and adjacent areas from June to September.

Sampling of zooplankton from the Norwegian weather ships was continued during 1951. Vertical hauls are taken regularly with the Nansen closing net in steps between 1000 metres and the surface.

In the coastal waters from the Oslofjord and westwards to Egersund vertical hauls were made with a 1 m. egg-net during May—June in order to investigate the occurrence of eggs and larvae of the sprat. At each station two identical hauls were made (Gunnar Dannevig).

University of Oslo (T. Braarud).

I. **Surveys and Taxonomical Work.**

(a) North Sea survey of May 1948.—The main report on the phytoplankton has been prepared by T. Braarud, K. Ringdal Gaarder and Jul. Grøntved.

(b) Weather ship "M" in the Norwegian Sea.—Additional phytoplankton material collected by

"Armauer Hansen" in July 1950 has been worked up and a report on this and the 13-month survey at "M" has been prepared by P. Haller Nielsen.

Zooplankton from the 13-months survey has been worked up by O. J. Østvedt and a report has been prepared on the copepods. Collecting of zooplankton was continued according to a simplified programme.

(c) Weather ships "Item" and "Jig".—The 1-litre samples from the surface has been worked up and a report is prepared on this material and a more extensive material from "Baker" (Robert W. Holmes).

(d) Dramsfjord.—In connection with an eight-month survey of this fjord, quantitative phytoplankton material from monthly samples at 4 depths at a number of stations in the Dramsfjord and the adjacent part of the Oslo fjord has been worked up by B. Føyn and G. Rytter Hasle. A report is in preparation. Zooplankton from the same stations was collected by means of the Clarke-Bumpus apparatus (see report for Transition Area Committee).

(e) The investigations on *Halosphaera viridis* was continued.

(f) In order to study the reliability of the sampling method used in phytoplankton surveys a number of parallel stations were worked in outer Oslo fjord. The material has been worked up and a report is being prepared by G. Rytter Hasle and P. Ottestad.

II. Experimental Work.

(a) Experimental studies of the effect of external factors upon rate of reproduction in species of *Ceratium* were continued (E. Nordli).

(b) The effect of salinity upon rate of reproduction was studied on different clones of *Peridinium trochoideum* and *Prorocentrum micans* (T. Braarud and E. Nordli).

(c) The rate of reproduction in various species of dinoflagellates was determined at 5°-intervals between 5° to 35° C. (P. Bakken).

(d) An autecological study of *Coccolithus Huxleyi* was started with clones originating from the Plymouth sound, weather ship M and the west coast of Norway (G. Mjaaland).

III. Chemical Work.

Composition analyses have been made of the dinoflagellates *Amphidinium operculatum, Goniaulax polyedra, Prorocentrum micans* and the diatom *Sceletonema costatum.*

A report is being prepared by L. Smevik.

Publications.

Braarud, T. & Hope, B.: The annual phytoplankton cycle in a land-locked fjord near Bergen (Nordåsvatn). Rep. Norw. Fish. and Mar. Invest., **9**, 16.

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Braarud, T. & Rossavik, E.: Observations on the marine dinoflagellate *Prorocentrum micans* Ehrb. in culture. Ibid., Avh. I, Mat.-Nat. Kl., 1.

Gaarder, K. Ringdal: *Bacillariophyceae* from the "Michael Sars" North Atlantic Deep-Sea Expedition 1910. Sci. Res. "Michael Sars" North Atlant. Deep-Sea Exped. 1910, **2**, 2, 1951.

Hasle, G. Rytter: Phototactic vertical migration in marine dinoflagellates. Oikos **2**, 2, 1950.

— & Nordli, E.: Form variation in populations of *Ceratium fusus* and *tripos* from cultures and in the sea. Norsk Vid.-Akad. Oslo, Avh. I, Mat.-Nat. Kl., 4.

Scotland.

Aberdeen (J. H. Fraser).

During 1951 the plankton of the Scottish and adjacent areas was sampled by the Scottish research vessels "Explorer", "Scotia", "Clupea" and "Kathleen". This programme included several visits to the northern and central North Sea, Faroe and west Scottish coasts, one visit to the Outer Banks off the west Scottish and Irish coasts, and one visit to Icelandic waters. The "Clupea" made a concentrated effort in the Moray Firth area from April to August, on the Fladen from July to November. The main cruises were:—

1950.
October: Northern and central North Sea, Faroe.
November: Northern North Sea, Shetland, Faroe.

1951.
January: East Scottish area, Firth of Forth.
February: Northern North Sea, Shetland.
March: Faroe.
April: Northern North Sea, Shetland, Moray Firth, Faroe.
May: West Scottish area, Faroe, Moray Firth.
June: Northern and central North Sea, Moray Firth, Fladen, Outer Banks, west Irish coast.
July: West Scottish coast, Faroe, Moray Firth, Fladen.
August: East Scottish coast, Moray Firth, Fladen, Faroe, Iceland.
September: East Scottish coast, Fladen, Faroe.
October: East Scottish coast, Fladen, Faroe.
November: East Scottish coast, Fladen.
December: Northern North Sea.

As in the previous year sampling was carried out by International fine silk net (vertical), Hensen egg-net (vertical), 1-metre nets (horizontal, oblique and vertical), and 2-metre ring (vertical). The primary objects of the plankton work on these cruises have been to obtain information on the following:—

1. General plankton distribution and production; 2. relationship between the plankton and the hydrographic conditions; 3. estimation of haddock eggs and larvae at Faroe and in the northern North Sea; 4. estimation of the production of autumn spawned herring larvae in the east Scottish area; 5. relation-

ship between herring and plankton in the Moray Firth in the summer and on the Fladen during summer and autumn.

Reports on some of the results of these investigations are given in Vol. VIII of the *Annales Biologiques*.

Edinburgh (K. M. Rae).

The Continuous Plankton Recorder Survey of the North Sea and western approaches to the British Isles was continued by the Scottish Marine Biological Association during 1951. The scope was similar to that in 1950 and in all some 34,000 miles were sampled. When sailing schedules and weather conditions permitted tows were taken each month on the following routes:—

	Records	Miles
Hull to Rotterdam	10	850
Hull to Hamburg	10	2,350
Hull to Copenhagen	7	2,400
London to Stockholm	9	2,000
Leith to Copenhagen	12	5,150
Leith to Lerwick	7	1,250
Pentland towards Oslo	3	900
Pentland towards Weather Station "A"	9	3,850
Bergen towards Weather Station "M"	10	2,850
Glasgow towards Weather Station "I"	10	3,000
Glasgow towards Weather Station "J"	13	5,450
Lizard towards Weather Station "J"	9	3,850
Lizard towards Weather Station "K"	1	400

We are deeply indebted to the captains, officers and crews of the weather ships and commercial vessels of many countries who have again co-operated so generously in the work.

Analyses have been made of the plankton caught and a brief summary of the results is to be found in the *Annales Biologiques*; more detailed accounts will be published in the *Hull Bulletins of Marine Ecology* which in future will be puslished by the Association under a new title.

Particular attention has been given to the distribution of "indicator species" in the Atlantic drift and to the identification and distribution of the larvae of benthic forms thought to be of importance to the diet of demersal fish: the lamellibranchs, echinoderms and decapods.

The intensive survey of the plankton off the Scottish coast during the summer herring fishery was continued in close collaboration with the Aberdeen Laboratory of the Scottish Home Department. Between March and September 1,800 plankton samples were taken with the Hardy plankton indicator; some 1,200 by commercial drifters and 600 by the vessels of the Scottish Home Department. These have been analysed and the distribution of the plankton so obtained can be compared with the concentrations of herring based on daily charts showing the position and size of the commercial catches. These data, comprising 7,800 records from individual drifters were, in 1951, collected by the Aberdeen laboratory.

Analyses of the stomach contents of 2,400 herring taken from the Scottish grounds were also completed in an effort to relate the diet of the fish with the plankton available in their immediate vicinity and also to the age, race and maturity study undertaken on the same herring by the Scottish Home Department.

Four numbers of the *Hull Bulletins of Marine Ecology* have been issued during the year:—

Stubbings, H. G.: Continuous Plankton Records: Fish Eggs and Young Fish in the North Sea, 1932—1939. (**2**, 15).

Barnes, H.: A Statistical Study of the Variability of Catches obtained with Two Models of the Hardy Plankton Indicator. (**2**, 16).

Rees, C. B.: Continuous Plankton Records: First Report on the Distribution of Lamellibranch Larvae in the North Sea. (**3**, 20).

Rae, K. M.: Continuous Plankton Records: Explanation and Methods, 1946—1949. (**3**, 21).

Millport (S. M. Marshall).

Mr. Vernon Bainbridge has studied the biology of the cladoceran *Evadne nordmanni*, with particular attention to the seasonal distribution in the Clyde sea area, variation in size, reproductive behaviour and feeding habits. He found that the species was most common in May and June and that sexual forms were most abundant when the fertility of parthenogenetic females was high.

Dr. D. T. Gauld continued his investigation of the feeding behaviour of *Calanus finmarchicus* with a study of diurnal variation in feeding. Most of the copepods taken at the surface were full of food while those at greater depths contained less food. Since copepods usually migrate to the surface at night their feeding mostly takes place at night but in the absence of such migration *Calanus* appears to feed at all hours of the day.

In collaboration with Mr. Bagenal modifications were made to a conventional coarse silk tow-net to enable it to be towed at high speed (fliped net, see *Nature* Vol. 168, p. 523). The net was used in a series of cruises round Arran to study the distribution of young herring.

Dr. Gauld has also continued his work in co-operation with Professor J. E. G. Raymont on the relation between temperature and respiration in copepods.

Professor A. C. Hardy and Mr. Richard Bainbridge have continued a study of the vertical migrations in relation to light of *Calanus finmarchicus* using the plankton wheel as well as the Hardy and Paton vertical migration apparatus in the sea. Mr. Bainbridge has also made some direct observations on the movement of plankton animals in the sea by using a modified frogman suit.

Dr. Marshall and Dr. Orr continued their work on egg laying in *Calanus* and the effect on it of different kinds of food. All diatoms, though not all flagellates, proved suitable and led to continued production of eggs. An experiment using cells grown with radio-

active phosphorus showed that the food taken in went largely towards egg production.

The time of egg laying in different broods was investigated and it was found that whereas the overwintering brood laid almost entirely between midnight and 4 a.m., the summer broods had a much less definite period.

Spain.

De nombreux échantillons de plancton ont été prélevés par le "Xauen" au cours de ses campagnes. L'étude en a été faite visant surtout la recherche des œufs et des larves de Clupéidés. Les laboratoires méditerranéens ont poursuivi les récoltes et l'étude du plancton côtier.

Sweden

(H. Höglund.)

In connection with herring investigations net hauls with a Hensen net were taken daily during March and April at a station in Bohuslän.